SOVIET MOTOR GUNBOATS OF WORLD WAR II

The Red Army's 'river tanks' from Stalingrad to Berlin

PRZEMYSŁAW BUDZBON ILLUSTRATED BY WALDEMAR GÓRALSKI & PIOTR FORKASIEWICZ

NEW VANGUARD 324

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SOVIET MOTOR GUNBOATS OF WORLD WAR II

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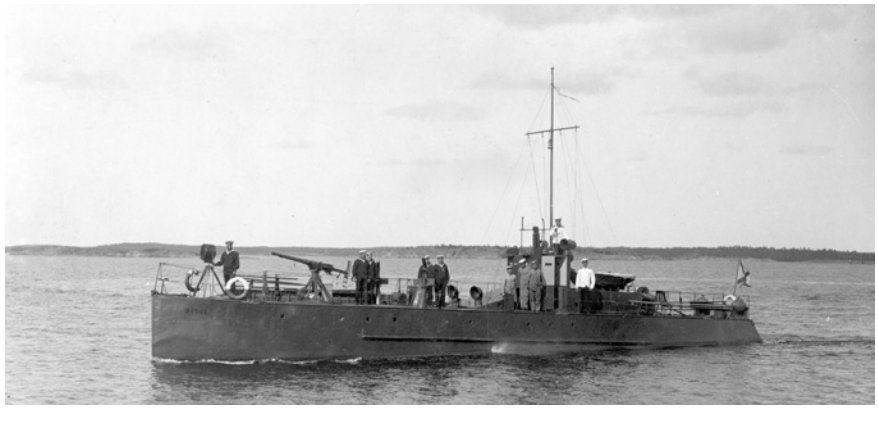
INTRODUCTION

The river gunboat in Imperial Russia

In vast and sparsely populated areas of Russia, the enormous river system was practically the only means of communication. It was the rivers which, at the turn of 16th and 17th centuries, enabled the expansion of the Cossacks into Siberia, from the Urals to the Pacific coast, in less than six decades. The rivers provided quick transport and formed the natural boundaries in the relatively flat Siberian terrain. In 1858, Russia forced territorial concessions on China, formalized by the Treaty of Aigun, which established the border on the Amur River between the Russian Far East and Manchuria. At the beginning of the 20th century, protection of the Amur border became the responsibility of the Russian Imperial Navy, which developed the concept of a mobile defence, the backbone being armoured gunboats (modelled on the British Sultan class built for the Nile), supported by fast dispatch boats. The requirements for the latter called for 0.5m-draught 16-knot boats armoured against light infantry fire, armed with 3in guns, and dimensions which allowed transportation by rail.

In 1907 the Putilov Works at St Petersburg was awarded the contract, albeit with the contractual speed reduced by 3 knots as compared with the original requirements. The Shtyk class of ten fast boats as they were rated at that time were delivered in 1909. They were transported over 7,000km by the Trans-Siberian Railway and finally by cart to the village of Kokuy,



Shashka (Sword) of the Shtyk-class low-draught fast boats as they were rated after completion. Its 3in mountain gun was replaced by a 3-pdr QF gun, the 0.3in Maxim MGs are in both port and starboard mountings, two trawl floats are visible at the end of the transom. It was transferred to the Baltic in 1915, but destroyed and abandoned in Abo (Turku, Finland) by the Soviets in March 1918 because icy conditions prevented escape to Kronstadt. (Marek Twardowski collection)

on the bank of the Shilka River (a tributary of the Amur). The boats had a flush deck hull with straight stem, with the crew quarters in the bow followed by the engine room and officer's cabin. The low height deckhouse extended to one-third of the hull, with the conning tower (CT) placed amidships above the engine room. The front of the CT and two side doors were fitted with visors; the top was fitted with a searchlight and folded mast.

D-class armoured motor gunboats (Imperial Russian Army Model 1916) of the Soviet Dnieper Flotilla photographed during the Red Army's 1935 manoeuvres off Kiev. The Dnieper Flotilla was formed in 1925 with the Polish Pinsk Flotilla targeted as the most probable adversary, and became the only unit of the Red Fleet to participate in the invasion of Poland on 17 September 1939. (Author's collection)

Lightweight motor propulsion, high speeds and armour combined with armament equivalent to quick-firing field guns provided the gunboats with a tough defence system in an area saturated with light infantry fire. The boats were designated for the escort duties of riverine transports, flanking firing of enemy positions, the landing of assault and scout parties, and providing fire support to them. In vast areas which lacked any solid roads they could be used like armoured cars on land. During World War I, they were used in this fashion on the Danube and the Pripyat rivers, as well as in restricted saltwater areas like the Gulf of Finland or the Azov Sea.

Demand to increase their firepower led, in 1916, to the interesting, if barely feasible, project of producing 45-ton armoured boats armed with a 4in gun and two 122mm Schneider howitzers. To compensate for the recoil of such heavy guns when firing abeam, a gyroscopic system was developed to stabilize the gun barbettes, using electric actuators fed from the generators. Two boats were laid down at the Kolomenskij Works (Oka River, SE of Moscow), but construction was soon abandoned. It was resumed in 1930, albeit to a simplified design, and both vessels were commissioned in 1934 to the Amur Flotilla (Partizan class) as the first Soviet-built armoured motor gunboats.

The successful employment of motor gunboats and various improvised craft during the Russian Civil War confirmed the advantages of fast, small, armoured river units in the conditions of a modern battlefield. Some of the surviving boats were commissioned by the Red Navy in the 1920s, with a few still in service at the beginning of World War II. By that time all of them were classed as *Bronekatera* (armoured boats), including the four Model 1915 gunboats (named K class), two Shtyk-class dispatch boats, five Model 1915 patrol boats (named N class) and four Model 1916 armoured boats (named D class).

DEVELOPMENT

Planning

After five years of Civil War, Russia re-emerged as the Soviet Union, officially established in December 1922 with the Bolsheviks in absolute control. The key issue for Bolshevik leaders at the time was who would succeed Lenin, who was gravely ill (he died in January 1924). Control of the armed forces was key, a position lost by Trotsky in March 1924 and, for a time, that ended

Bronekater No 91 and *No 92* (ex-*Trevoga* and ex-*Partizan* respectively) in the late 1930s. (Author's collection, courtesy of Boris Lemachko)

the battle for supremacy between the various Bolshevik leaders. This opened the way for a general purge (later described as a 'military reform' in Soviet history). The political climate was not conducive to the expansion of the Navy which, after the Kronstadt sailor mutiny in 1921, suffered a gradual curtailing of its independence. Following several setbacks in the bureaucratic struggle taking place in Moscow, the Navy failed to win acceptance for its warship construction programmes and, in 1926, lost its status as a separate fighting service. It was deprived of all missions except direct support of the ground forces, and lost its 'fleet' status, being renamed 'The Naval Forces of the Workers' and Peasants' Red Army' (*Morskie Sily RKKA*). The priority instead was the Red Army, which was to play the main role in the 'liberation march' to the West. The concept of armoured motor gunboats did, however, fit well into the role foreseen for a future Navy, and therefore remained a focus for naval planners.

The Sino–Soviet conflict of 1929 for control of the Chinese Eastern Railway resulted in the takeover by the Soviet Union of the Bolshoi Ussuriysky Island on the Amur River, and focused attention on the defence of border rivers, thus reviving the concept of the armoured motor gunboat. The design process was initiated by the Shipbuilding Department of the Directorate of the Naval Forces, with the assistance of the Scientific-Technical Committee, comprised of prominent shipbuilding experts who remained in the country after 1917. Requirements were issued for two types of armoured motor gunboats – one large type for the Amur and a small one for the Dnieper River – the latter planned for operations against the Polish Pinsk Flotilla, which was perceived as a potential threat. These characteristics formed the basis for the preparation of the 'tactical technical requirements' for the design of the two types of armoured motor gunboats, which were approved on 12 November 1931 by the Director of the Naval Forces, Vladimir Orlov.

The Amur type had a 50-ton displacement, two-shaft power plant with petrol engines, a 0.7m draught, armament of two 3in guns in tank turrets and a 0.3in MG in a single light turret. The Dnieper type was conceived as 'half' of the Amur type: one shaft, one 3in gun in a tank turret with two

0.3in MGs in light turrets. The combination of tank turrets and the fact that the boats could be easily transported by rail made the design both a breakthrough and unique. The tank turrets solved several previous design, production and operational challenges: they provided full protection of the gun crew, were compact, and combined carefully designed mounting, large-scale production and compatibility with army ammunition supply and field repair facilities. Easy transportation assured inter-theatre mobility. The result was a kind of 'river tank' with unique fighting qualities that other navies or armies were never able to match with vessels of similar capabilities.

The requirements were detailed in June 1932 by indication of the main armament type, and design of the boats was ordered on 22 June 1932 from the *Lenrechsudoproekt* (Leningrad river vessel project) construction bureau at Leningrad, in its infancy at the time. The project works were to be led by Iurij Benua (Benoit), a 1930s graduate of the shipbuilding faculty of the Polytechnic Institute (later known as *The Leningrad Shipbuilding Institute*) who had completed his compulsory military service working as a constructor in the Naval Works at Kronstadt. Entrusting such an important task to a novice was common in Soviet shipbuilding at the time; almost all pre-1917 shipbuilding technical experience had been practically annihilated during the Civil War. All shipyards were nationalized and looted, and technical documentation vanished. Most engineering staff were mobilized or fled to the countryside to avoid starvation, or emigrated to avoid persecution focused on the 'elites'. It is no surprise then that the new generation of Soviet naval architects were young and inexperienced. Vladimir Nikitin, who directed the design of the first surface warships in 1926, had graduated the previous year; Sergej Bazlievskij, a 1927 graduate, was made responsible for the design of intact stability, spherical bulkheads and ballasting systems for the first Soviet submarines on the first day of his job; Boris Chilkin, a 1929 graduate, took charge of the modernization of the Marat-class battleships in the early 1930s.

Iurij Iurevich Benua (his second name was patronymic – in Russian, *otchestvo*) in the 1930s. A native of a noble family of French origin (their distant ancestor fled to Russia during the French Revolution in 1794 and became the chief confectioner of Empress Maria Feodorovna, wife of Emperor Paul I and mother of emperors Alexander I and Nicholas I), he could not but irritate the OGPU-NKVD. (Author's collection)

Engineers involved in any kind of military-industrial project of significance worked at high personal risk. An error that in normal circumstances could mean the loss of a job, in Soviet conditions could literally mean a loss of life. In the early 1930s, the country found itself under mounting pressure from Stalin's terror tactics. Industrial managerial staff worked in the shadow of the Shakhty Trial of 1928, the hidden agenda of which was to cover up the bottlenecks resulting from central planning. A total of 50 Russian and three German technicians were tried publicly on the charge of 'wrecking' the industrial effort, with five executed death sentences. When teething problems appeared on the first Soviet-built submarines, the entire management of the submarine design team was arrested by the Soviet secret police, the OGPU (later known as NKVD, then the KGB), and accused of 'wrecking' the project. In April 1931 they were judged, found guilty of 'wreckage' and sentenced to death by firing squad, despite the issues having already been solved with the help of the accused. As the judgement would have meant the collapse of the whole submarine construction programme, the court (instructed by the OGPU), amended the death sentences to ten years' imprisonment and the naval architects were assigned to an elite labour camp – the design and construction bureau of the OGPU, informally known as *sharashka*.

Project 1124

The Amur-type armoured motor gunboat was a priority and design work started in 1933, in parallel with preparations to start series construction of the first batch of 28 boats in the Krasnyj metallist Yard in Zelenodolsk on the Volga, near Kazan. At that time all military and civilian projects in the Soviet Union had codes comprising of the word *Proekt* (Project) and one- or two-digit numbers. This system, that is still in use today, reached the four-

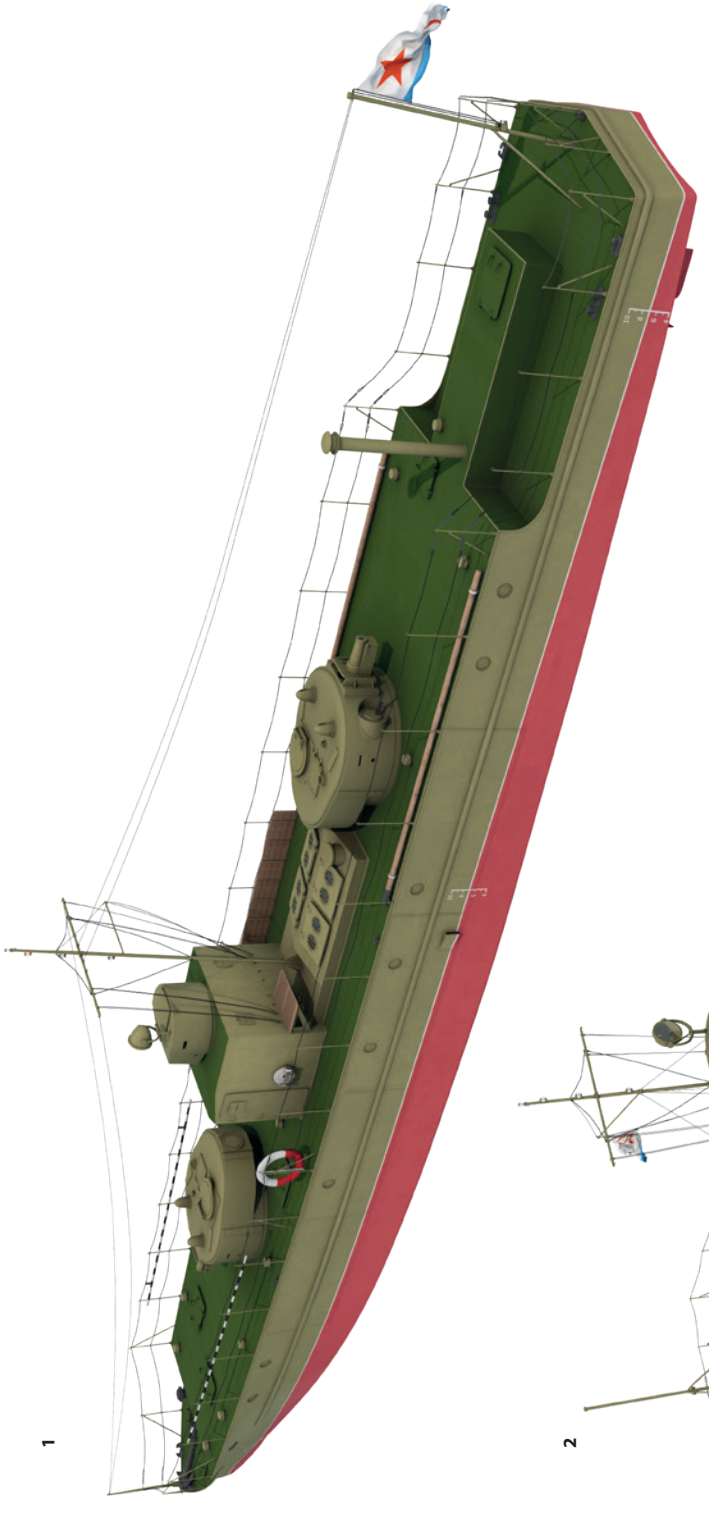
A

1. THE *PROJECT 1124* SERIES I BOAT

***Project 1124* Series 1 motor-gunboat specification**	
Displacement	37 tons standard (design); 43.8 tons full load
Dimensions	Length: 25.3m; beam: 3.59m; draught: 0.76m
Complement	1 officer and 12 men
Armament	2 Model KT (later named KT-28) 3in/16.5 guns in T-28 tank turrets
	1 Model P-5 single turret with Degtiarev Model DT 0.3in machine gun
Armour	belt: 6mm
	deck: 4mm (7mm amidships in area of petrol tanks)
	conning tower: face, sides 8mm; roof 4mm
	T-28 tank turret: face, sides, roof 20mm
Machinery	2 GAM-34 petrol engines driving two shafts
Speed	maximum (for duration of 1 hour): 21 knots at 1,700hp (1,850rpm); sustainable: 17.8 knots at 1,350hp (1,770rpm); range 289nm at 13.5 knots; B-70 type petrol 4.2 tons
***Project 1124* Series I construction**	
Builders	Works No 194 (A. Marti), Leningrad; Works No 264 Krasnoarmejsk; Works No 302, Novosibirsk; Works No 340 (Krasnyj metallist), Zelenodolsk; Works No 363 (Ust'-Izhorskaia), Izhorsk; Works No 638, Astrakhan; laid down 1935–43, completed 1936–46
Class	*Bronekater No 11–No15, No 21–No 25, No 41–No 46, No 51–No 55, No 61–No 67* (Amur)
NKVD Border Guard	*K-86–K-89* (Amur)

2. THE *PROJECT 1125* SERIES I

***Project 1125* Series 1 motor-gunboat specification**	
Displacement	22.15 tons standard; 26.55 tons full load
Dimensions	Length: 22.65m; beam: 3.40m; draught: 0.52m
Complement	Models 1936, 1940: 1 officer and 9 men
Armament	1 Model KT-28 3in/16.5 gun in T-28 tank turret
	3 Model P-5 single turrets with Degtiarev Model DT 0.3in machine gun
Armour	belt: 7mm
	deck: 4mm
	conning tower: face, sides 7mm; roof 4mm
	T-28 tank turret: face, sides, roof 20mm
Machinery	1 GAM-34 petrol engine driving one shaft
Speed	maximum (for duration of 1 hour): 19 knots at 850hp; range 135nm at 13.2 knots; B-70 type petrol 1.3 tons
***Project 1125* Series I construction**	
Builders	Works No 340 (Krasnyj metallist), Zelenodolsk; Works No 344, Molotov; Works No 638, Astrakhan; laid down 1938–45, completed 1938–47
Class	*Bronekater No 16–No 19, No 26–No 29, No 31–No 38* (Amur); *Bronekater No 111–No 114, No 121–No 124* (Dneper); *Bronekater No 401–No 402, B-111–B-115, B-211–B-215, B-221–B-222, B-231–B-234* (Baltic)



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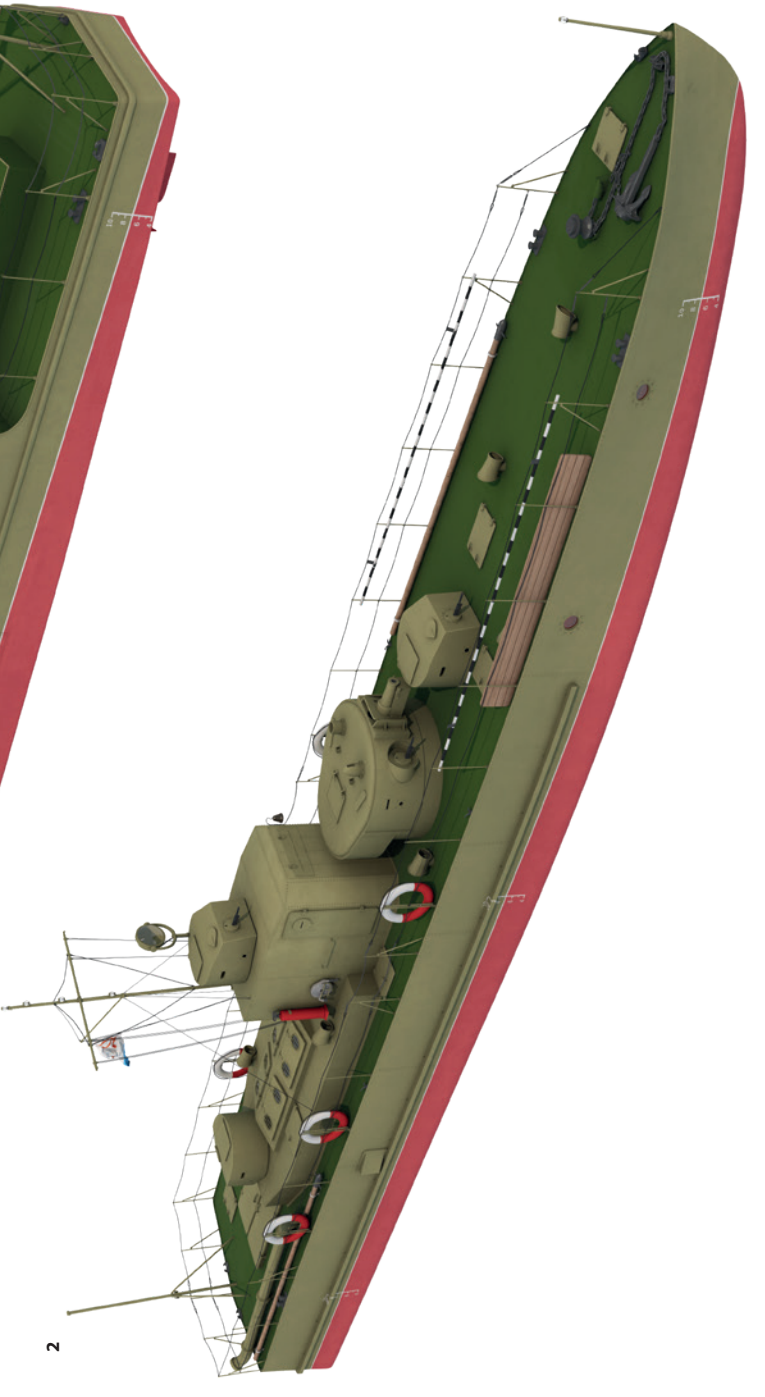

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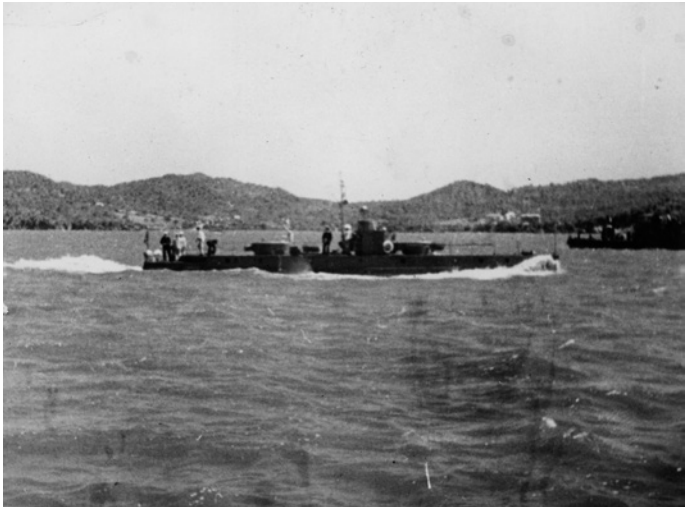


There are very few photographs of *Project 1124* boats in their fitted shape that have been preserved. Firstly, their existence was top secret; secondly, there were few opportunities for them to be photographed in the Amur wastelands. Here, one of the first of their class, *Bronekater No 13* of the Amur Flotilla is photographed in 1937. Note the T-28 tank turrets and DT machine-gun turret atop the CT and stepped deck forward that took on a huge amount of water even in fine weather. Two trawl floats are carried at the stepped deck aft. (Imperial War Museum RUS 693)

digit range only in the 1980s. However, the *Rechsudoproekt* (river-vessel project) organization which comprised of two design bureaux at that time (the *Lenrechsudoproekt* at Leningrad and an office at Sormovo) used the *SB* (Ship Construction) prefix designation for their projects which were purely civilian. For the military order, the *SB* was replaced by *11* to make the secret documentation easier to distinguish. So, Amur-armoured motor gunboats were given the designation *11-24* while Dnieper-armoured motor gunboats received *11-25*. In practical application, the hyphen disappeared and a four-digit code remained.

The biggest issue for the design team was a lack of final parameters for most of the devices (engines, tank turrets, generators, etc.) as they were either at prototype phase or still on the designers' desks, so their weights, dimensions, centre of gravity, connectors and, most importantly, output, could not be precisely defined . This could hamper a ship's project.

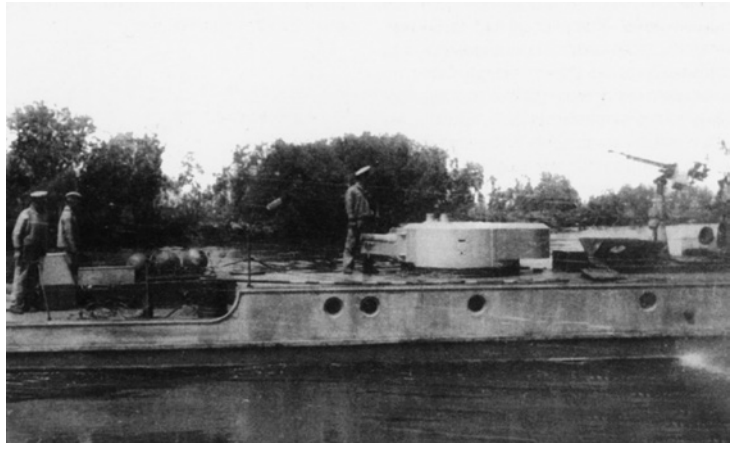
To keep the draught low, the hull was designed using full lines, with straight sides connected by a small radius turn of the bilge and a slightly 'V' bottom (this was to prevent suction to a riverbed which could happen when using a purely flat bottom). The keel line was raised in the forepart and was arch-connected to the straight stem to make beaching easy on a river shore to disembark a landing party. The two shafts ran in recessed bottom tunnels to protect screws in shallow water. The manually powered balanced rudder was placed directly abaft each three-bladed 0.61m diameter steel screw. To save weight, the deck had 0.5m steps on both ends. The 75kg Hall-type anchor was stowed at the bow on the port side in a deck recess.

The hull of the transverse framing was subdivided into ten compartments, all connected to the main deck via hatches (*see* Plate A). The clear height of the internal compartments was only 1.55m; crew spaces furniture and lockers for ammunition were made from duralumin.

The midship part was protected by a riveted armoured citadel with a 4mm deck (increased during construction to 8mm in the area of the petrol tanks) and 7mm sides ranging half the length of the hull between the turrets and extending up to 200mm below the waterline. Thanks to the straight sides and angular camber, the armour plating did not require bending. The citadel, which housed the turret compartments, engine room, petrol tanks and radio room, was part of the hull structure. Deck plates above the petrol tanks were removable to provide access for replacement of the tanks. The light casing was fitted above the engine room to facilitate removal of motors. The CT, with a wheelhouse in front, was placed amidships and armoured with 7mm sides and a 4mm roof (increased to 7mm during construction). The front was fitted with a horizontal window of triplex glass, covered by hinged armour with visors. On both sides, the armoured doors were fitted with portholes covered by armour with visors. To keep the silhouette low, the wheelhouse was put in a 0.5m recess in the deck, so a watchkeeper practically stood on top of the fuel tanks.

As the boats were designated to operate on rivers with direct visibility of a bank, so ship-handling facilities were kept to a bare minimum: steering wheel, telegraph, voice pipe to the machinery room and compass. An *Ersh*-type 18W medium-wave radio-set was also provided.

The power plant consisted of two GAM-34 petrol engines (one left and one right rotation), a naval modification of the four-stroke V-shaped 12-cylinder aircraft AM-34 type engine. The naval version had the reduction gear with clutch reverse and water-cooling system modified to the outboard water feed. These 1,065kg units had a nominal power of 720hp each, but for the duration of one hour, a maximum output of 850hp could be attained. The 'safe-life' of the engine was 150hrs. Gas was stowed in four removable tanks of 6,700 litres, later to be fitted with an inert-gas anti-sparking system based on cooled exhaust gases and a CO_2 firefighting system.

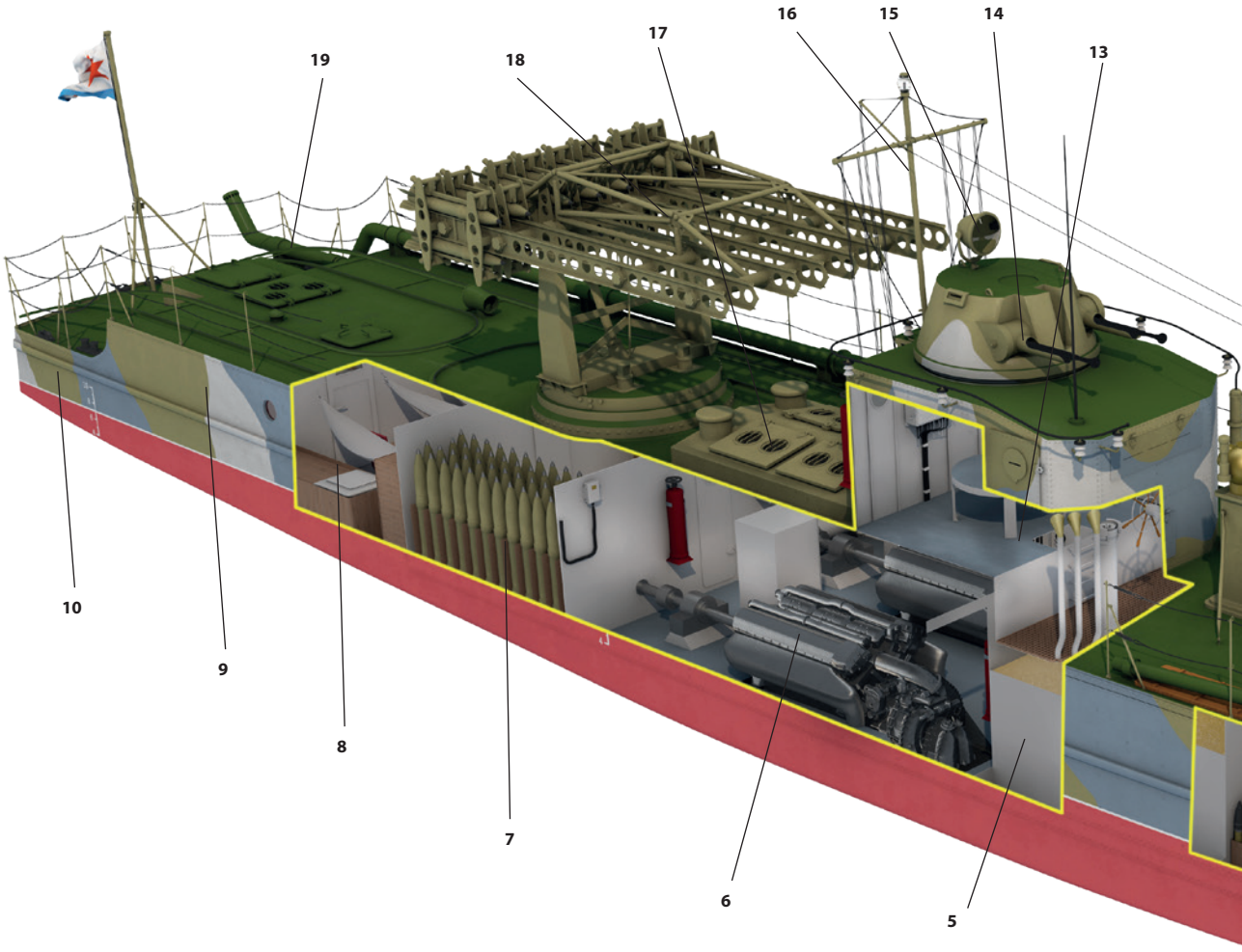


The aft T-28 tank turret of a *Project 1124* boat, mid-1940s, with a 0.5in DShK MG single mounting forward. Note the reinforcement at the top of the sides, introduced in all Series I boats, also the R-type mines on the rails.

The main armament consisted of two 3in KT-type guns in T-28 tank turrets placed on the main deck with turret compartments below. The story of the T-28 tank has the plot of a spy movie: the tank was modelled on British Vickers A1E1 Independent tank technical documentation which was stolen and delivered to the Soviet Union as the result of espionage. This was achieved under the cover of commercial activity of the ARCOS (All-Russian Cooperative Society) in London, a fact that was disclosed after a British police raid on 31 March 1927. As a result, diplomatic relations with Russia were severed by British Prime Minister, Stanley Baldwin.

Despite the obvious advantages of using a standard army tank turret, the T-28 turrets had two cardinal drawbacks when used as armament for motor gunboats. The first was their weight which accounted for 2.5 tons of top weight each, proving a critical factor for the stability of the gunboats. Their second drawback was the low elevation of the 3in guns in the turrets (+25 degrees) which did not allow for the shelling of land targets over high banks of a river. Already in 1934, at the request of Iurij Benua, modification of the T-28 turret aimed at reducing the armour to 10mm had been ordered at Kirov's Works which would more than halve the weight saved and increase the gun elevation to +70 degrees. Despite the urgency emanating from Soviet command (something not to be taken lightly during these times), the modified turret was never constructed. The lack of consequences for the factory's management can only be explained by the Navy being held in such low regard by the Soviet military hierarchy, and by absolute priority being given to Army orders.

Details of the forward T-28 tank turret of a *Project 1124* Series I boat in the mid 1940s. In the front part of the roof the TOP-type telescopic gunsight and PT-1 periscope can be seen. The ball mounting of the 0.3in DT-type bearing (ranging) machine gun is seen left of the 3in gun; (Marek Twardowski collection)



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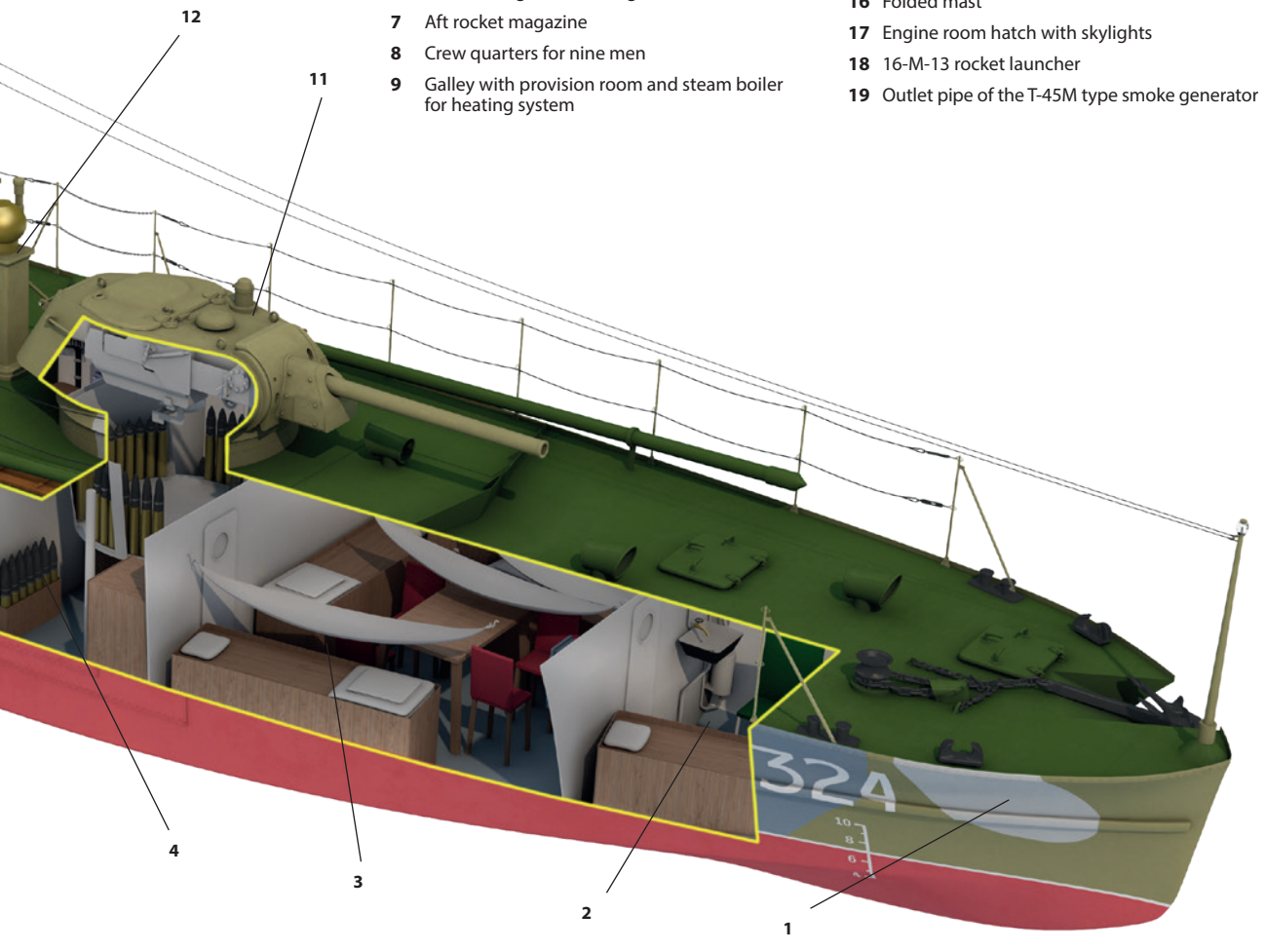
BK-324 IN 1945

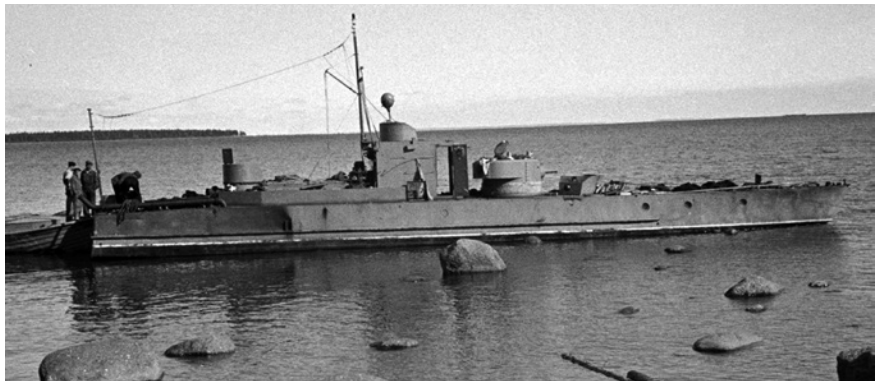
This *Project 1124* boat was laid down as Yard Number 307 in 1942 at Works No 368 at Astrakhan, then completed in December 1943, delivered by rail to Yeysk and commissioned in 27 February 1944 to the Azov Flotilla as *Bronekater No 324*, to be renumbered *BK-324* a month later. After the Azov Flotilla was disbanded on 13 April 1944, it was transferred to the 1st Division of the Danube Flotilla. It took part in the offensive in eastern Romania, and the takeovers of Belgrade and Budapest. During landing off Tát (near Budapest) on 22 March 1944, it took a direct hit by a rocket at the CT, killing five of the crew (including CO Senior Lieutenant L. M. Lugovoj), and causing a fire on board and damage to the hull. It was steered out of the fire zone by survivors of the crew. Following shipyard repairs, it returned to service after VE day.

The armament consisted of one Model F-34 3in/41.5 gun in the T-34 tank cast turret produced by the Kirov's Works at Cheliabinsk, and twin 0.5in DShK MGs in the turret of the DShKM-2BU type. The forward turret compartment housed the magazine with racks for 150 rounds which were loaded manually. The magazine was reloaded in a similar way to a tank – through a hatch in the turret's roof. Instead of the aft tank turret, it carried a 16-M-13 launcher of 132mm M-13 Katyusha rockets. Its aft magazine (originally the turret compartment) was fitted with racks for four full salvoes (64 rockets). The full salvo could be launched within 5–8 seconds, delivering 78kg of explosives to the targeted area. The firing cycle could be fixed in single, at turn and full salvo mode. Depending on the type of rocket, the range was between 5,500m and 8,470m with a deflection error of 85–135m of the length zone and 105–300m of correction respectively.

KEY

1. Forepeak
2. CO's cabin
3. Crew quarters for six men
4. Bow turret compartment with magazine and boatswain's store
5. Fuel tanks compartment with corridor on starboard and radio room on port side
6. GAM-34 engine in the engine room
7. Aft rocket magazine
8. Crew quarters for nine men
9. Galley with provision room and steam boiler for heating system
10. Steering gear with boatswain's stores and toilet
11. T-34 tank turret
12. Compass
13. Conning tower with wheelhouse
14. DShKM-2BU MGs turret
15. Searchlight
16. Folded mast
17. Engine room hatch with skylights
18. 16-M-13 rocket launcher
19. Outlet pipe of the T-45M type smoke generator





Stranded *Bronekater No 215* (*Project 1125* Series I) of the Baltic Fleet is inspected by the Finns after capture. Note the L-10 gun in the T-28 tank turret and three PB-5-type MG turrets. (SA- Kuva 42116)

Without waiting for the prototype phase, typical of Soviet production at the time, the first batch of 17 boats was laid down in 1935. Just before keel laying, the project was jeopardised by the deportation of Benua's parents to Kazakhstan, an order from the OGPU on the basis of their aristocratic origins. They shared the fate of those members of the family who had stayed in Russia after the October Coup: either be deported or shot as 'enemies of the people'. Iurij Benua was next, but the threat from the OGPU was reversed by a personal intervention of a friend of Stalin – Kliment Voroshilov, the Peoples' Commissar (Minister) of Defence. In an effort to confirm the significance of Iurij Benua to the Soviet military effort, he was formally employed by the *Rechsudoproekt* in April 1935, and put in charge of the general design team.

During trials of the most advanced boat in the autumn of 1936, it was discovered that because of its straight sides, it tended to heave in waves, making the deck constantly wet, even in relatively calm water. As a result, a fender was fitted for drynesss. However, after its first year of service on the choppy waters of the Amur, the fenders were still not sufficient to prevent water flooding into turret compartments at high speed. The tank turrets were therefore placed atop 6in-high barbettes, while a bulwark was fitted at the bow, along the whole length of the deck recess. However, as the deck was not plated up, in heavy weather the recess acted as a large scoop, and gathered water.

These changes were retrofitted on existing boats while those still undergoing construction received a flare, in addition, at the bow.

Organization

The first batch of 17 boats was completed in the summer of 1936, transported via the Trans-Siberian railway and commissioned by September 1936 to the Amur Flotilla. These were joined in December 1938 by the remaining 11 boats. They bore no names, but, like aircraft or tanks, were given two-digit pennant numbers with the first digit being that of the combat unit (division) and the second digit that of the boat within the unit. Three squadrons were organized as follows:

Khabarov Sq (1st division, boats *No 11–No 15*; 2nd division, boats *No 21–No 25*)

Bureysky Sq (4th division, boats *No 41–No 46*; 5th division, boats *No 51–No 55*)

Zeysky Sq (6th division, boats *No 61–No 67*)

The numbers changed if boats were transferred to another combat unit; for example, boat *No 67* became *No 56* after transfer from the 6th to the 5th division in October 1938. For the purpose of numbering, the abbreviation No was used in Russia, which is equivalent to 'No' (Number), apart from one character. A similar system was applied to other types of boats or small ships (MTBs, subchasers, motor-minesweepers etc.) but with the designation of type added to make the identification complete.

The full name of the armoured motor gunboat *No 11* was *Bronekater No 11*, which was quite long. As a result, the abbreviation *BKA* (*Bronekater*) was used. Motor gunboat *No 11* was thus listed as *Bronekater No 11* in one document, while in another as *BKA No 11*. In 1944, therefore, apparently inspired by the numbering systems of the Royal Navy and US Navy, a unique numbering system was introduced throughout the whole of the Red Fleet which consisted of the type abbreviation followed by sequential numbers. The aforementioned *Bronekater No 11* became *BK-11* on 10 February 1944, and carried this number until the end of its career in the late 1950s.

Project 1125

The Dnieper-type motor gunboat design was run under Iurij Benua as the follow-on of the previous project, with unification given the highest priority. This put some constraints on the design with the use of the one-shaft GAM-34 power plant and one T-28 tank turret being the most significant. The general arrangement followed that of *Project 1124*, with the most striking difference being an additional MG turret in front of the forward tank turret and replacement of the aft tank turret with the MG turret. A 'spoon stem' was applied to facilitate beaching on a riverbank during landing operations. To prevent water flooding, both bow and aft deck steps were abandoned in favour of a light sheer forward and negative sheer aft, while the tank turret was installed on a much higher barbette. All other fittings were shared with the previous project; however, the citadel had a uniform deck armour of 7mm. As the general quarters had only four bunks, additional hammocks were provided there, as well as in both MG turret hull compartments. The crew size remained the same as in the Amur gunboats, because of the need to crew two MG turrets. The KT-type gun was to be replaced by the 3in/24 L-10 gun on the modified T-28 tank turret.

This time, the pre-prototype boat was laid down in 1935 by the Krasnyj metallist Works to test the concept. To speed-up construction time of the prototype, common steel was used to imitate the armour plates in areas of the citadel (the boat was later employed for training and experimental purposes). It ran trials successfully in 1938 and series construction of eight boats was ordered for the Dnieper with the follow-on order for 16 boats for the Amur placed by the end of the year. In 1939 the order was made for the next 18 boats, but their final designation was decided by the coming war.

The *Project 1125* Series I *Bronekater No 215* in Finnish service as *VTV-1*. It remained in commission to the Finnish Navy until its return after the armistice in September 1944. (SA-Kuva 9824185)

It is worth noting that in 1938 the concept of a large seagoing armoured motor gunboat conducting operations in the Gulf of Vyborg was developed by the *Rechsudoproekt* and came to maturity in 1940 under the code *Project 138* as a 153-ton diesel-powered 19-knot boat with 20mm belt armed with two 3in tank turrets. Design work was suspended in 1941 because of the unavailability of diesel engines from Soviet production at that time.

RIVER TANKS AT WAR

Shoulder to shoulder with Nazi Germany, 1939–41

In accordance with the Molotov–Ribbentrop Pact, on 17 September 1939, the Soviet Union invaded Poland with 600,000 troops, joining Germany in their war against Poland and its allies, France and Great Britain. Within the coming weeks, the Polish Pinsk Flotilla was surrounded by troops of the Red Army and was eliminated as a potential threat to the Soviet Dnieper Flotilla. Following the seizure of the eastern provinces of Poland, the Soviet Union imposed a border on the western fringes with a friendly Nazi Germany (which seized the rest of the country), and so the allocation of the 1939 *Project 1125* boats to the Dnieper Flotilla (to be renamed Pinsk Flotilla in June 1940) lost all strategic sense. Still on the stocks, the boats were allocated to the Baltic Fleet as the Soviet Union prepared for war with Finland. They were commissioned to the Baltic Fleet in July 1940, too late to participate in the Winter War with Finland, but just in time to power-up the Danube Flotilla which was created after the Soviet borders reached the Danube, following annexation of the Romanian provinces of Bessarabia and Northern Bukovina. The objective of this force was to counter the Romanian flotilla which operated there. Fourteen motor gunboats were loaded onto railway carts in Leningrad and were transported to Odessa where, after launching and stocking, they departed to Izmail harbour, which was established as the main base of the flotilla. The other four boats remained in the Baltic.

Project 1125 Series II *Bronekater No 63* (Yard Number 353) of the Volga Flotilla cleared for action. It received *No 34* on completion, being changed to *No 24* on 12 June 1942, *No 65* on 18 August 1942, then *No 63* a month later and was *No 43* from 16 November 1942. On 7 March 1944, it got the permanent number *BK-43*. The photograph was taken around 1943. Note the T-34 tank turret with the F-34 type gun. (Imperial War Museum RUS3694)

Series II modifications

Both projects were modified in 1939–40 to include operational experience and to prepare for the restart of series production. The principal aim was to change the main armament, owing to the termination of T-28 tank production, making the turrets unavailable. Work on a new main battle tank for the Army – the T-34 – became an opportunity to change the weapon system on the gunboats. The one selected was the 3in/30.5 L-11 gun, developed by the Kirov's Works which was based on the World War I vintage 3in/30 AA Lender gun. The Navy had not, though, given up on the idea of a 'navalized' turret for armoured motor gunboats. In 1939, the MU (*Morskaia Ustanovka* = Naval Mounting) naval-type turret with +70 degree elevation was developed and armed with the 3in/24 L-10 gun but failed practice tests. In January 1940, the MU turret armed with the 3in/30.5 L-11 gun was ready and, in September that year,

The *Project 1124* Series II *Bronekater No 101* (Yard Number 112) of the Baltic Fleet at speed presenting its welded T-34 tank turrets produced in 1941 by the Works No 264 in Stalingrad. (Author's collection)

trials were run on one of the *Project 1125* boats of the Danube Flotilla. The turret was not accepted for production however, because of relatively small demand restricted to purely naval use (the non-standard turrets could easily hamper mass production, especially considering the poor production planning by Soviet-style management). The other reason was obsolescence since the design was based on the T-28 tank turret. Taking all of this into consideration, the T-34 tank turret was selected as the basic armament for both types of motor gunboats. Another change, common to both types, was the replacement of the 0.3in MGs turrets with twin 0.5in DShKM-2B ones.

The main propulsion units were also changed to the GAM-34BS type engines of higher output, fed by 30/70 per cent spirit/gasoline mixture. The *Project 1125* boats also got auxiliary 70hp ZIS-5 truck engines for low-speed manoeuvrings.

1940 motor gunboats programme

With the blue-water navy's political role of power projection and demonstration of force, and the coastal force's role of supporting coastal wings of the Red Army, the role of armoured motor gunboats was critical for the Red Army's inland offensives, supporting troops in land operations. In light of this, the 1940 motor-gunboats-construction-programme had a momentum appropriate to Stalin's military ambitions: to prepare for an assault on Europe after France and Germany had bled themselves dry as a result of the Second Imperialistic War (the then Soviet name for World War II).

However, the giant Soviet rearmament programme undertaken in the mid-1930s was hampered by a weak Soviet industrial base with poor planning and management. The programme was realized in a chaotic

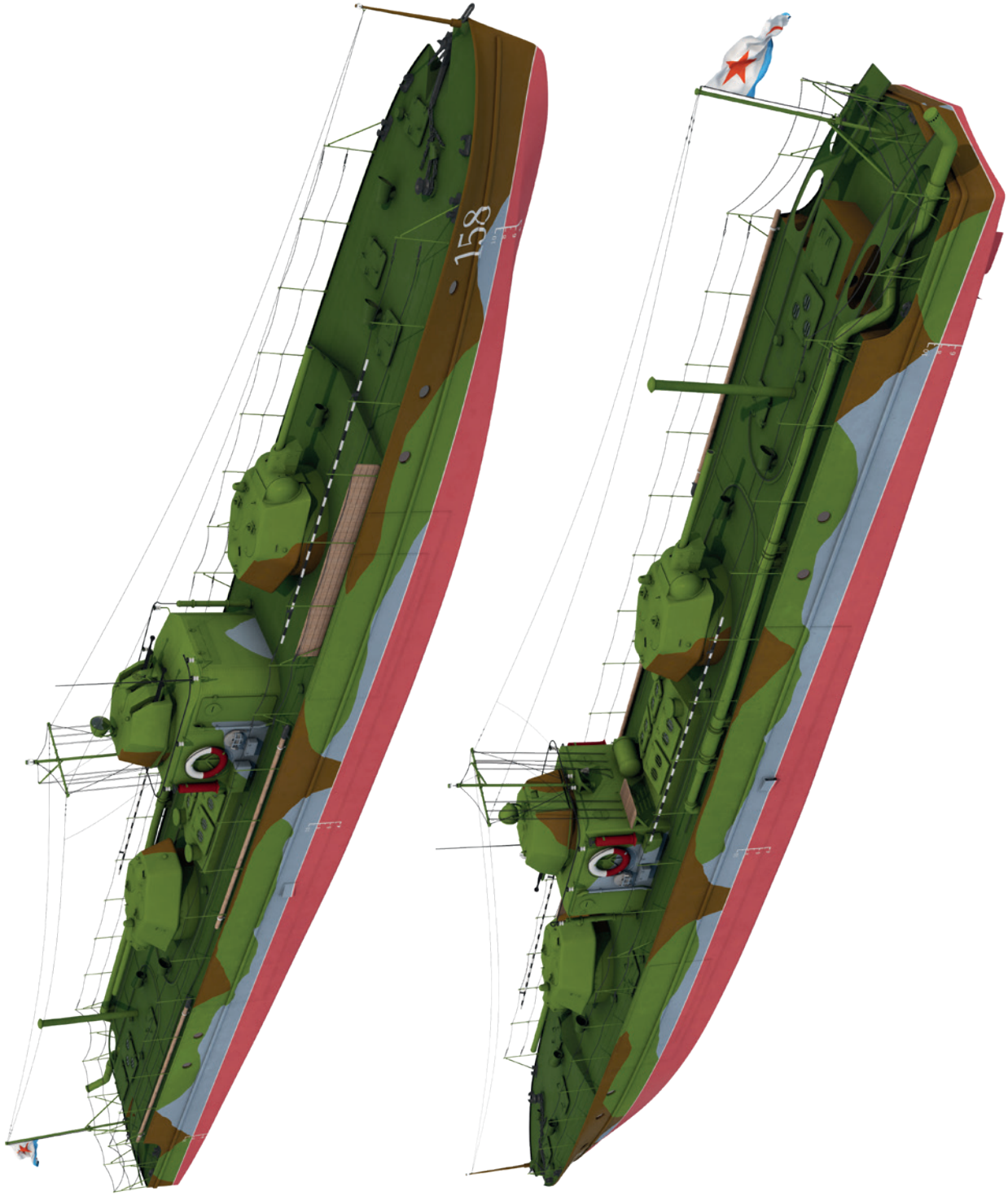
The *Project 1124* Series II boat *Bronekater No 33* with mixed armament: 3in/30 Lender AA gun at the bow, single 37mm/67.5 61-K AA gun and DShKM-2B MG turrets. Note the camouflage, indicating that this photograph has been taken off Kerch around November 1943. (Marek Twardowski collection)

environment characterized by constant policy and organizational changes. This was a period marked by terror and bloody purges, the militarization of society and forced rearmament to which the entire economy was subordinated. All this was done in a highly uncoordinated manner, causing tensions and imbalances in all areas – both social and economic. One should also add that technological backwardness, the low cultural capital of Soviet society and a work ethic that had been destroyed, all played a part too. Ignorant for the most part of technical constraints, the upper tier of 'Red' management had only a limited selection of instruments in its toolbox, so reorganization seemed the only remedial measure available. It is unsurprising that Soviet military-industry was a subject of frequent reorganization at this time.

The formation of the People's Commissariat of the Defence Industry in December 1936 was aimed at strict centralization of the Soviet military-industrial complex. To ease the management of a growing defence industry and, to satisfy the Russian need for secrecy, the end-to-end numbering of defence plants (known as *Zavod* = Works) in all industries was introduced on 30 December that year.

C THE *PROJECT 1124* SERIES II MODEL 1943

***Project 1124* Series II motor-gunboat specification**	
Displacement	45 tons standard; 48 tons full load
Dimensions	Length: 25.3m; beam: 3.96m; draught: 0.82m
Complement	1 officer and 17 men
Armament	2 Model F-34 3in/41.5 guns in T-34 tank turrets
	1 Model DShKM-2BU twin turret with DShK 0.5in/79 machine guns
Armour	belt: 6mm
	deck: 4mm
	conning tower: face, sides 8mm; roof 4mm
	T-34 tank turret: face, sides 45mm; roof 15mm
Machinery	2 Packard 4M-2500WB petrol engines driving two shafts
Speed	21 knots at 2,400hp; range 351nm at 10 knots; petrol 4.8 tons
***Project 1124* Series II construction**	
Builders	Works No 194 (A. Marti), Leningrad; Works No 264, Krasnoarmejsk; Works No 302, Novosibirsk; Works No 340 (Krasnyj metallist), Zelenodolsk; Works No 363 (Ust'-Izhorskaia), Izhorsk; Works No 638, Astrakhan; laid down 1940–43, completed 1941–46
Class	*Bronekater No 11–No 16* (Caspian Sea); *No 31–No 32, No 41–No 44* (Volga); *No 61–No 62* (Lake Onega); *No 97–No 100* (Lake Ladoga); *No 101–No 102* (Baltic); *No 101–No 103* (Caspian Sea); *No 211–No 212* (Lake Onega); *No 213–No 214, No 221* (Caspian Sea); *No 314, No 324, No 411–No 414, No 421* (Azov Sea); *No 422* (Danube); *No 423–No 424, No 431–No 434* (Azov Sea); *BK-20, BK-47, BK-48, BK-67* (Amur); *BK-103* (Baltic); *BK-115, BK-154* (Danube); *BK-158–BK-159* (Baltic); *BK-160* (?), *BK-161–BK-165* (Caspian Sea); *BK-308–BK-310* (Baltic); *BK-318–BK-320* (Danube); *BK-335–BK-339* (Azov Sea); *BK-343–BK-346* (Dnieper); *BK-435–BK-436* (Danube); *BK-437* (Caspian Sea)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Not to burden the naval shipyards, the armoured motor gunboats were designated for mass production by small inland yards. The construction programme was allocated thus:

Project 1124: Works No 340 at Zelenodolsk (formerly Krasnyj metallist); Works No 264 at Stalingrad (formerly Sarepskaia verf'); Works No 363 (formerly Ust'-Izhorskaia verf'); and Izhorskij zavod (not numbered at that time) at Kolpino.

Project 1125: Works No 300 at Kiev (formerly Leninskaya kuznitsa); Works No 264 at Stalingrad.

Design development and supervision: TsKB No 50 (Central Design Bureau No 50, formerly *Rechsudoproekt*).

Germany's immediate victory over France shattered Stalin's plans since they were based on the premise of a protracted war between Germany and the Allies. Potential Allied success did not serve Stalin's interests either, but German domination in the West produced the worst fear – that of a possible German attack before the Soviet Union would itself be ready to attack Germany. As a result, armament priorities changed rapidly and the blue-water navy's great shipbuilding programme found itself on a collision course with other requirements, especially the modernization of the armoured forces of the Red Army. The production of tanks required a large amount of steel and turrets (the same as those fitted to the gunboats), which constrained

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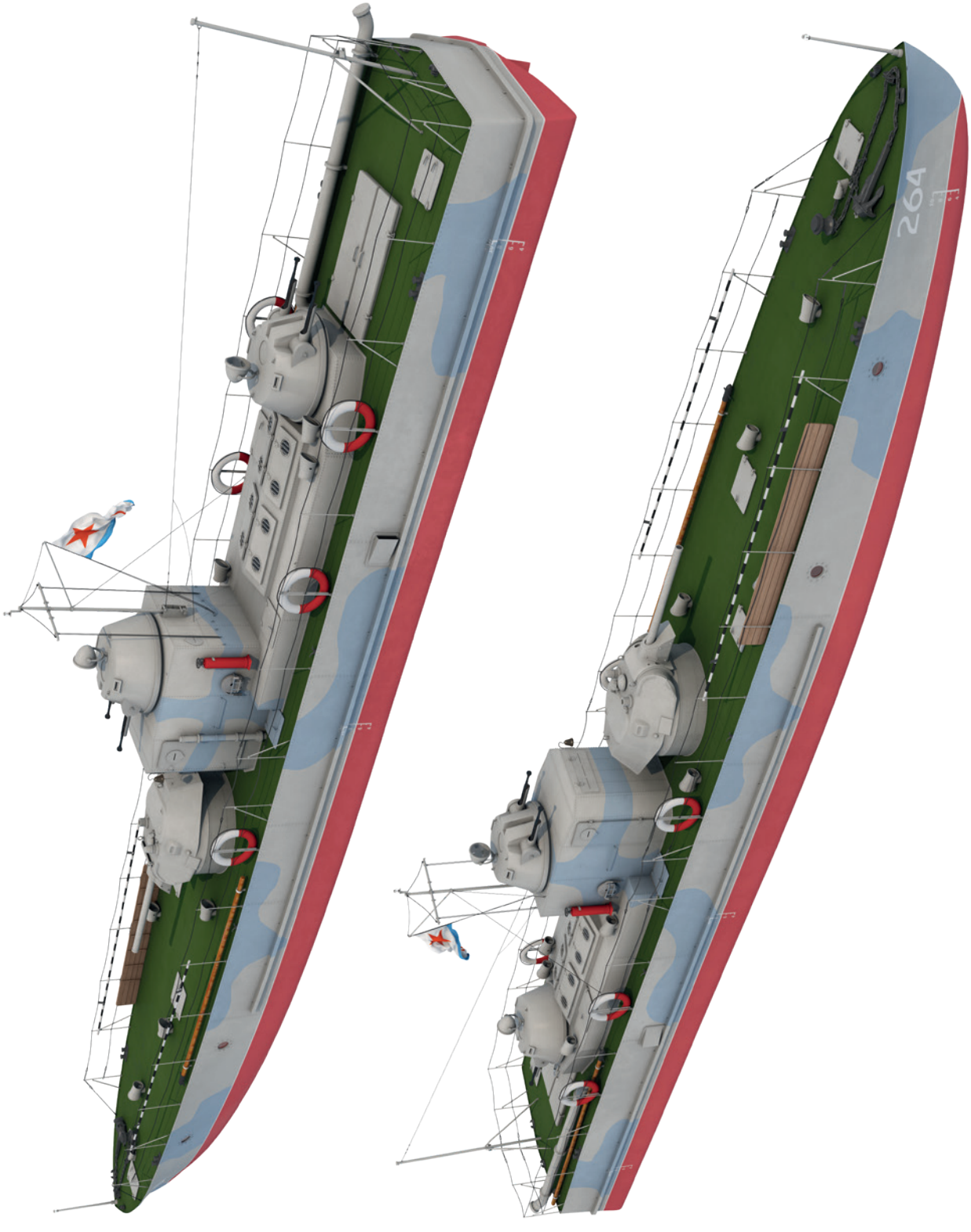
THE *PROJECT 1125* SERIES II MODEL 1940

***Project 1125* Series II motor-gunboat specification**	
Displacement	28.6 tons standard; 30.3 tons full load
Dimensions	Length: 22.65m; beam: 3.54m; draught: 0.56m
Complement	1 officer and 9 men
Armament	1 Model F-34 3in/41.5 gun in T-34 tank turret
	2 Model DShKM-2B twin turrets with DShK 0.5in/79 machine guns
Armour	belt: 7mm
	deck: 4mm
	conning tower: face, sides 7mm; roof 4mm
	T-34 tank turret: face, sides 45mm; roof 15mm
Machinery	1 GAM-34BS petrol engine driving one shaft; 1 ZIS-5 type 50hp cruising engine
Speed	sustainable: 19.7 knots at 675hp; range 313nm; fuel (30/70% mix) 1.75 tons
***Project 1125* Series II construction**	
Builders	Works No 340 (Krasnyj metallist), Zelenodolsk; Works No 344, Molotov; Works No 638, Astrakhan; laid down 1940–45, completed 1940–47
Class	*Bronekater No 1–No 2* (Volga); *Bronekater No 11–No 14, No 21–No 24, No 31–No 34* (Volga); *No 35* (Onega Lake); *Bronekater No 50* (training detachment); *Bronekater No 63–No 65* (Onega Lake); *Bronekater No 71, No 91–No 93, No 103* (Volga); *Bronekater No 123–No 124, No 131–No 134* (Azov Sea); *Bronekater No 222–No 224, No 231–No 234, No 241–No 244* (Caspian Sea); *Bronekater No 322–No 325* (Baltic); *BK-3–BK-8* (Caspian Sea); *BK-76–BK-77* (Danube); *BK-78–BK-79* (Baltic); *BK-85–BK-90, BK-104–BK-111* (Amur); *BK-139–BK-140* (Dnieper); *BK-141–BK-152* (Amur); *BK-186* (Dnieper); *BK-200–BK-202* (Onega Lake); *BK-301–BK-304* (Caspian Sea); *BK-305–BK-307* (Baltic); *BK-371–BK-385* (Dnieper)
Completed after the war	*BK-153, BK-155, BK-157, BK-187–BK-199, BK-335–BK-339, BK-425–BK-430, BK-435–BK-459*



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the building programme of motor gunboats, though not to the extent experienced by the blue-water navy. In 1940 and the first half of 1941, 55 hulls in total were laid down, but not one was completed by mid-1941 as the production of turrets was delayed.

Availability of tank turrets was a major factor in slowing down completion of the hulls. During 1941–42, the Navy requested 100 tank turrets from a total production order of 16,000, but this was mostly rejected. Early in 1941 there were 22 completed hulls lying idle at Zelenodosk awaiting 36 tank turrets, but only half of the delivery was confirmed. In addition, the turrets were of welded construction and poor quality, and were only reluctantly accepted by the Army. Ground tests showed that multiple hits that did not necessarily pierce the armour caused the welds to crack and the structure to collapse. For this reason, the Army preferred cast turrets, despite their lower puncture resistance. However, the Navy was happy to get any turrets, despite there being too few of them. Therefore, it was decided to arm the remaining boats with 3in/30 Lender AA guns of World War I vintage, and to rate the motor gunboats as AA defence boats. This weaponry was hopelessly outdated with little protection against fast modern aircraft; the guns were not even shielded so their gun crews were dangerously exposed to infantry fire. But, as was the case with Russian/Soviet military doctrine, human losses did not matter, and the delivery of one ship (even defective) helped to count towards the fulfilment of production plans, on which the freedom, or life, of the factory management depended. Adaptation plans were prepared in February 1941 by the *Rechsudoproekt*, providing plating out of deck cut-outs for the barbettes. The stiffened plates, with ammo-handling hatches, were screwed to the deck with the Lender guns mounted atop. Of the 22 boats completed in the summer of 1941, 11 were fitted with the Lender guns.

The bow Lender 3in/30 AA gun of a *Project 1124* Series II boat. Note exposure of the gun crew and the deck step at the bow with the bulwark around. (Author's collection)

The German invasion, 1941

On 22 June 1941 the Germans launched their great offensive against the Soviet Union, catching the Red Army generally unprepared and, apparently, while moving to advanced starting positions. In the blink of an eye, the name 'Second Imperialistic War' was changed in all Soviet media to the 'Great Patriotic War'. The blue-water navy programme was immediately stopped and the complete effort of the industrial complex was directed toward the needs of the Red Army. Some of the inland shipyards, like Works No 264 in Stalingrad, were switched entirely to the production of tanks.

A *Project 1124* Series II boat masked in thickets on the banks of the river. Note the T-34 tank cast turret and DShKM-2BU MG turret. (Marek Twardowski collection)

On the day of the German invasion, there were 75 armoured motor gunboats in naval and NKVD service, with the vast majority (57), on Asiatic stations at the Amur and the Amu-Daria rivers, far from the battleground. Of the remaining (all of the *Project 1125* boats), four were allocated to the Baltic Fleet and 22 to the Danube Flotilla. The modern motor gunboats,therefore, avoided the area of the heaviest direct thrust of the *Wehrmacht* and the collapse of the Soviet fronts, which was left to the fate of elderly Russian and ex-Polish boats that comprised the backbone of the Pinsk Flotilla. These were massacred by massive and coordinated fire from German artillery and the Luftwaffe, and proved how ineffective riverine ships were in areas fully controlled by the enemy.

The modern boats of the Baltic Fleet were involved in defence operations in the Gulf of Finland, with one – *Bronekater No 215* – captured by the Finns.

The German advance, 1942

The rapid advance of German troops, who were occupying important industrial centres one by one, forced the Soviet leadership to evacuate industrial plants and some of the shipyards and design bureaux. The Kiev Works No 300 was evacuated to Zelenodolsk, together with some unfinished hulls and material for the assembly of a few others. To compensate for loss of capacity, production of the armoured motor gunboats was allocated to the Stalin Yard (Works No 638) at Astrakhan, to the Molotov Works (Works No 344) at Molotov (Perm until 1940 and again since 1957), and small ship repair yards at Kujbyshev, Novosibirsk, Omsk and Krasnoiarsk. The TsKB No 50 was evacuated to Nikolaevsk-on-Volga to become part of the TsKB No 32. All these changes contributed to the slowing down of the motor gunboat construction programme, with all the 1942 output sent straight to the front line: all 17 of the *Project 1125* boats completed were commissioned to the Volga Flotilla and were involved in the Stalingrad battle, while all six of the *Project 1124* boats built were commissioned to the Caspian Flotilla, where the Germans were soon expected. Only in 1943 were they transported by rail from Astrakhan on the Caspian Sea coast to Yeysk on the Azov Sea and commissioned to the Azov Flotilla.

The road to Stalingrad: the Danube Flotilla 1941–42

The Soviet Danube Flotilla was based in Izmail and in small ports located on the left bank of the 160km-river section constituting the Soviet–Romanian border (from the area near the Romanian town Galați, up to the mouth of the Danube in the Black Sea). To restrict the area of manoeuvre of Romanian monitors on the night of 24 June 1941, four motor gunboats covered by Soviet monitors, laid 24 R-type mines in the fairway of the Danube meander in the area of the village Pisica (now Grindu). Romanian artillery damaged *Bronekater No 112* which lost power and had to be towed out.

Incidentally, at that time *No 112* officially carried a new divisional number: *No 102*. However, as the order was dated 21 June 1941, it did not reach the field unit to be implemented in time and the boat carried the former number painted on the bow. Such situations were common in the Red Navy at that time, no doubt creating much confusion. The divisional numbering system, easy to apply for tanks or aircraft operating from one place, was difficult to manage for ships operating from various bases.

A *Project 1124* Series II boat of the Ladoga Flotilla towing its damaged sistership. Note the 0.5in DShK MG on the platform atop the CT. (Marek Twardowski collection)

Plagued by artillery fire from the Romanian shore, on 24 and 26 June, the Soviets launched two small assaults aimed at seizing enemy guns in an area of the village Chilia Veche up to the fortified village Periplava. The motor gunboats and patrol boats delivered troops which successfully displaced Romanian forces from the right bank. On 26 June, *Bronekater No 112* (actually *No 102*) was heavily shelled by Romanian artillery off Periplava, so had to be towed to Lake Kagul (on the left bank) where it was scuttled within a fortnight to avoid capture by advancing Romanian troops. On 28 June, *Bronekater No 114* (actually *No 104*) was shelled by Romanians and sunk off Crapina.

On 11 July the Soviets made another attempt to land troops in the fortified area of Periplava to destroy the Romanian battery there. *Bronekater No 134* (*No 501*) and *No 113* (*No 103*) took landing parties ashore, but the first was stranded in shallows and, after petrol tanks were shot through, was set on fire. The second was set alight during attempts to save its companion and was burned out.

In mid-July, an advance by Romanian troops on the left bank of the Danube threatened to encircle Izmail, so the Soviets decided to withdraw troops from the right bank of the river, which was completed on the night of 19 July with the use of motor gunboats and patrol boats. *Bronekater No 403* (two days earlier having been changed from *No 203*) was shelled by the Romanian battery off Periplava and sunk.

There were several *Project 1125* boats with the '204' pennant number, but the one in the background here is apparently *BK-204* of the Onega Flotilla, photographed between March 1944 when it got the permanent number and June 1944 when it left for the Baltic Fleet. It was completed in the spring of 1941 and carried a T-34 tank cast turret produced at Chelyabinsk Kirov Works, PB-5 MG turrets and 0.5in DShK MG atop the CT. On completion (Yard Number 327 of the Works 340 at Zelenodolsk), it became *Bronekater No 64*, to be changed to *No 21* on 30 April 1942 when it returned to Lake Onega from wintering at the Volga. (Marek Twardowski collection)

The same day, all serviceable ships of the flotilla were gathered at Zhebriiany (now Primorskoe) and left for Odessa. As the town was already under threat from the Romanian 4th Army, part of the flotilla (including 16 motor gunboats) was moved to Nikolaev. They were then employed in defensive actions in Ukraine.

Of the 16 motor gunboats, ten would be lost on the Dnieper and the Don rivers in the following five months. In November 1941, the flotilla was disbanded, and the remaining six motor gunboats were taken over by the Black Sea Fleet and later transferred to the Azov Flotilla. All were lost during the German offensive in the summer of 1942, which led the Germans to the Caucasus and the banks of the Volga at Stalingrad.

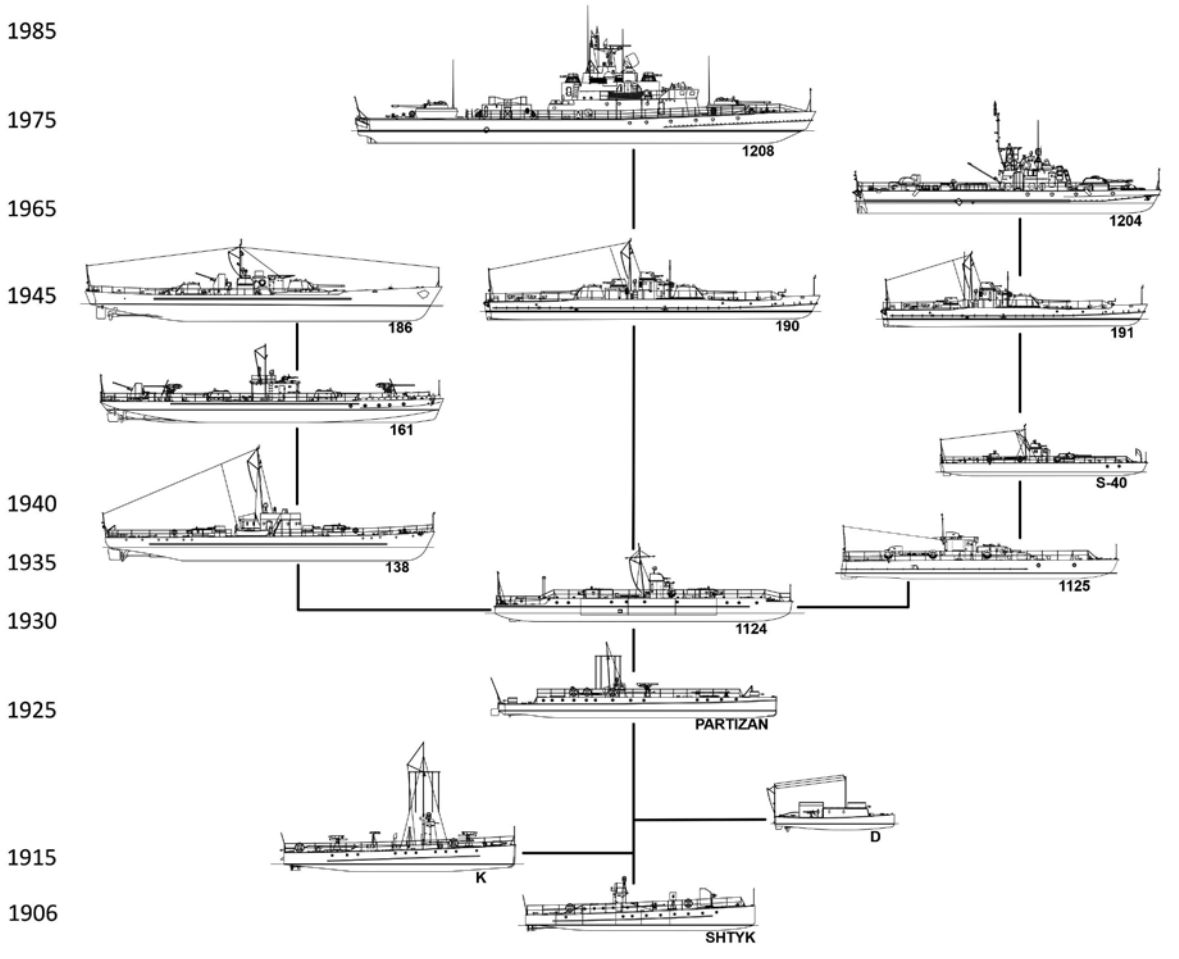
Camouflaged *Project 1124* early-1942 production boat of the Danube Flotilla in 1944. It is armed with the T-34 tank cast turrets of the Chelyabinsk Kirov Works and DShKM-2B MGs turret. Note the deck step at the bow with the bulwark around. (Author's collection, courtesy of Boris Lemachko)

Wartime shortages forced simplification of motor-gunboat construction, with scarce material replaced by the more readily available. Major changes included giving up lining and furniture in the crew spaces, replacing galvanization and lino deck covers with painting, replacing duralumin gratings with plywood or steel, and copper tubes with steel ones. The firefighting, bilge and electrical pumps were replaced by manual ones. The electrical wiring was reduced to the bare minimum. In some cases, the searchlights were abandoned which allowed the installation of smaller and more available generators of lesser output. The electrical compressor was sacrificed as well, while toilet facilities were replaced by buckets. Persistent lack of tank turrets caused most of the motor gunboats of 1942 production to receive 3in/30 Lender guns as the main armament (those boats that survived were retrofitted with tank turrets from 1943).

Because of the short supply of engines, the AM-34RNB aircraft engines that had exceeded their 'safe-life' date were used for propulsion after alteration of the water cooling system and fitting of a reverse clutch.

To compensate for the lack of regular armament, Katyusha rocket launchers (nicknamed 'Stalin Organs' by the Germans) were considered as weaponry for motor gunboats. The shipborne design and prototypes of the launchers were made during February–May 1942 by Works No 733 (former Kompressor Works, est. 1883 by the Prussians A. Dangauer and V. Kaiser). The prototype launchers were built in two versions: M-8-M for 24 82mm rockets and M-13-M for 16 132mm rockets. They were installed on motor gunboats of the Volga Flotilla, the former on *Bronekater No 61* (*Project 1125*) in place of the aft MG turret, the latter on *Bronekater No 41* (*Project*

A *Project S-40* boat, laid down for the NKVD but taken over by the Navy when under construction and completed in 1942, with T-34 tank welded turret, M-8-M type Katyusha 82mm rocket launcher and 0.5in DShK MG in open MTU-2-type mounting. The camouflage indicates that the photo has been taken late in 1943 during the Crimea assault. (Author's collection)



Development line of the Russian/Soviet armoured motor gunboats. (Drawing by Jerzy Lewandowski)

1124) in place of the aft tank turret. After positive conclusion of the firing trials on 17 July 1942, both boats left for Stalingrad for testing in the real battleground. Both types of launchers represented significant firepower, as they could discharge a full salvo of rockets within eight seconds, saturating a large area simultaneously. The most damaging aspect was their effect on the morale of those troops under fire – first by the roar of rockets starting from their launchers, second by the synchronous explosions in quite a restricted area. But, the weapon was far from being precise and did not generate much fragmentation close to the ground as compared to traditional shells with impact fuses – this phenomenon was caused by venting the rocket explosion vertically through the tube of the rocket engine. Nevertheless, their psychological effect on soldiers under fire was noteworthy.

The Katyushas were officially accepted as naval weaponry in November 1942, and 30 launchers were ordered. The system was improved in 1944 by fitting stoppers to keep rockets on the launching rails during foul weather, hermetically sealing the revolving mechanism and adding the possibility to select firing cycles as single rockets, in turn, or a full salvo. The new launchers 24-M-8 and 16-M-13 were accepted in 1944 and 1945, and by VE Day, 206 launchers had been delivered. They were widely applied on the armoured motor gunboats and other lesser boats, including MTBs of the G-5 type.

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BRONEKATER No 21 ON 9 OCTOBER 1942 AT STALINGRAD

The illustration shows a *Project S-40* boat laid down in 1941 for the NKVD Border Guard as Yard Number 330 at Works No 340 at Zelenodolsk, then taken over during construction by the Navy in June 1941 and numbered as *Bronekater No 43*, launched in 12 June 1942 and changed to *No 31*. Completed two weeks later, it was commissioned under Lieutenant Aleksandr Shcherbakov at Saratov on 25 July 1942 to the 3rd Detachment of the 1st Flotilla of 1st BKA Brigade of the Volga Flotilla. Together with other boats of the detachment, it was dispatched to Stalingrad as the German drive south to the Volga became apparent. Following changes in organization of the flotilla, it was renumbered to *No 21* on 18 August. In what was typical of Soviet military bureaucracy, its previous number was still kept painted on the sides and used in official documents of the Brigade.

The routine activity of the motor gunboat at that time was the escort duty of military traffic on the Volga, AA defence and transport of troops to the right bank. With the entry of the Germans to the downtown area, the transportation duties were undertaken under direct enemy fire. In one such skirmish Lieutenant Shcherbakov was wounded, so was replaced from 25 September by Lieutenant Pavel Nikitin. From 1 October, fierce fighting took place in the industrial part of the city in the north, around the Stalingrad Tractor Plant and Krasnyj Oktiabr' plants. The Soviet defenders there had been supported by motor gunboats which operated from the base near the village of Tumak, which was sheltered from German positions by the Isle Golodnoj, dividing the Volga into two branches at the centre of the town. So, leaving Tumak and heading north to Krasnyj Oktiabr' plant, the motor gunboats covered half of the distance via the left branch under the shelter of the island, but at the point where both branches converged, they had to cover the short distance exposed to German positions, and usually took the opportunity to open blind but intense fire. Most of the trips were done regularly at dusk when navigation was still possible, and the boats were barely visible from the shore.

This regular occurence encouraged Lieutenant Wigand Wüster of the German 171 artillery regiment to set an ambush. His guns fired on the passing boats frequently, but they could not be trained sufficiently quickly to follow a fast-moving target. After a few attempts he used two captured Soviet 3in ZIS-3 guns which were positioned close to the river and aimed at the point at the northern peninsula which formed the nose of the island, the place that the armoured motor gunboats usually passed. On 9 October when *Bronekater No 21* steamed from the Krasnyj Oktiabr' plant, Wüster's 'Russian' battery obtained a direct hit on the stern on the starboard side breaking the rudder cords, so the boat was beached on the peninsula. Immobilized, the motor gunboat became an easy target, and sank after further hits to the engine room, CT and fuel tanks. Three men were killed (including the CO), two drowned and three were wounded out of a crew of 13. Attempts to refloat the boat in the coming days failed and the wreck was pushed by the current deep into the river's bed. It was discovered only in 2016, raised in two parts in 2017 and, after reconstruction, displayed to the public in 2021. The illustration shows *Bronekater No 21* retaliating and firing at the German- held bank with its stern on fire.

Project S-40

***Project S-40* armoured motor gunboat specification**	
Displacement	34.3 tons standard; 36.5 tons full load
Dimensions	Length: 24.65m; beam: 3.85m; draught: 0.56m
Complement	1 officer and 12 men
Armament	1 Model F-34 3in/41.5 gun in T-34 tank turret
	2 Model P-5 single turrets with Degtiarev Model DT 0.3in machine gun
Armour	belt: 7mm
	deck: 4mm
	conning tower: sides 7mm; roof 4mm
	T-34 tank turret: face, sides, rear 40mm; roof 15m
Machinery	2 V-2 diesel engines driving two shafts
Speed	19.5 knots at 1,100hp; range 280nm
***Project S-40* construction**	
Builder	Works No 340, Zelenodolsk
Class	*Bronekater No 23, No 31, No 33–No 34, No 53–No 54, No 83* (Volga); laid down 1940–41; taken over by the Navy in 1941; completed 1941–42
NKVD Border Guard	*K-146* (Amu-Darya)

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Following operational experience, various improvements were introduced to newly built boats and were retrofitted on those which were still in use. The portholes were kept only in the radio room and general quarters, while the side armour in the area of the petrol tank was increased to 14mm. Wire radio antennae were replaced with 'handrail antennae' and a telephone network was installed connecting the CT with the engine room, turrets and steering gear compartment. As visibility from the CT through the visors was insufficient, the COs had the tendency to raise hinged armour above windows or to keep doors ajar which resulted in excessive losses of qualified naval personnel. Therefore, the tank-type periscope was installed atop the roof of the CT along with tank-type sight blocks.

The 16-M-13 Katyusha 132mm rocket launcher onboard a *Project 1124* boat. (Marek Twardowski collection)

Navigation in ice became a separate and quite new problem. The winter of 1941 was extremely severe, so ships from the Onega Flotilla were transferred south to the Volga for wintering. Steaming in icy conditions caused damage ranging from paint peeling off the hull and increased corrosion of the thin plates to damage of screws, and overheating engines as ice clogged the cooling system. This was partially solved by covering the bottom and sides of the ship with wooden planks which did not increase the draught so critically for riverine ships, but did reduce speed. The clogging was solved by installing an open cylindrical chest in the engine compartment which was higher than the water level. A grid was installed inside to stop and accumulate any ice coming in with the cooling water, this ice was then manually removed so the water coming to the cooling pump could be kept ice free. All this, however, was insufficient in extremely harsh conditions so boats had to be laid up on shore. During the siege of Stalingrad, laid-up motor gunboats were used as stationary artillery batteries. To keep the crew spaces warm, wood burning stoves were installed inside, while the deck was covered with sawdust and timber, and the sides were covered with snow.

The motor gunboats in light icy conditions in the winter of 1945 at the Danube. Icing at the Volga was much harder. Showing the difference in sizes, the one on the left is the *Project 1125* boat *BK-124* (the name *Geroi Sovetskogo Soiuza Golubets* is displayed on the side aft of the number), the one on the right is the *Project 1124* boat *BK-422* (the name *Stalinets* is displayed on the side apparently before the number). (Marek Twardowski collection)

The NKVD Border Guard

The Soviet secret police NKVD (earlier known as OGPU, then the KGB) was widely known for their participation in purges, GULAG camps, atrocities towards individuals not showing absolute obedience to the Soviet regime and massacres of civilians in territories acquired by the Soviet Union. One of their duties was protection of the Soviet borders (mainly against Soviet citizens wanting to leave or smugglers delivering goods to an internal market ravenous for any consumer goods). The Naval Section of the NKVD Border Troops was extensively modernized from the mid-1930s. Besides a large number of patrol motor boats, the NKVD Amur Detachment was augmented by the delivery of four of the *Project 1124* boats built in 1937 and four of the *Project 1125* boats (*Bronekater No 35–No 38*) transferred from the Amur Flotilla in 1940. Positive service experience prompted the NKVD in 1939 to build motor gunboats based on the *Project 1125* design but adapted for service on the Soviet–Afghan border on the Amu Darya River. The design (project designation *S-40*) was prepared by the *Rechsudoproekt* under the supervision of Boris Chetverikov. The layout generally repeated *Project 1125* except the propulsion, which comprised of two V-2 type tank diesels with shafts and propellers in tunnels. Due to the environmental specifics (clay bottom and much small debris carried by the current), a closed engine cooling system was fitted.

As the political police (NKVD) had absolute priority, the seven diesel-powered motor gunboats of the *Project S-40* class completed in 1942 were fitted with the precious T-34 tank turrets. The boats were then taken over by the Navy and commissioned to the Volga Flotilla. Shortage of MG turrets forced use of simplified single open 0.5in DShK MG mountings (designated as MTU) or recovered PB-5 turrets of 0.3in DT MGs.

Turning point, 1943

Fed by US-canned pork stew and driving US- and British-made trucks and armoured vehicles, the Red Army, at an enormous cost of life, repulsed the German 6th Army at Stalingrad in December 1942 and annihilated it in February 1943. Deliveries of weaponry, food, trucks, aircraft and petrol from the Allies made the deployment of Soviet numerical superiority on the battlefield possible. Supplies included components necessary for wartime production, especially engines of all kinds, rolling stock and sophisticated products like radar and ASDIC (sonar). Stopping the panicked retreat from the Germans made the stabilization of wartime production at evacuated plants possible. Availability of Lend-Lease high-power Packard and Hall-Scott Invader engines, as well as T-34 tank turrets from Soviet plants allowed armoured motor gunboat production to resume at a much larger scale and with a complete outfit. In total, 49 boats of both types were completed in 1943 and all (except four boats sent to the Onega Flotilla) were commissioned to the Azov Flotilla. Joined by the boats transferred there from the Volga and the Caspian Sea, they participated in landing operations at Taganrog, Mariupol and Osipienko. Thirty-one armoured motor gunboats took the dual roles of fire support and landing craft during an attempt to assault Crimea which lasted from 31 October to 11 December 1943, and which saw the loss of six of them with an additional two severely damaged.

Armoured motor gunboats at Eltigen during the November 1943 Crimea assault operation. Looking from the left, a *Project 1124* boat alongside a *Project 1125* one, then the *Project 1124* boat *Bronekater No 33* and a *Project 1124* boat at extreme right. (Marek Twardowski collection)

The Soviet takeover of Eastern Europe, 1944–45

In 1944 the Red Army obtained a strategic initiative over the *Wehrmacht* and entered the territories of Poland, Lithuania, Latvia, Estonia, Romania, Slovakia, Bulgaria, Hungary, Yugoslavia

A *Project 1124* boat escorting a *Tender*-class landing craft. (Author's collection)

and Finland. Whether considered as an ally or an enemy, Soviet troops were followed by the NKVD, terror and the introduction of the Soviet order. The Soviet war economy was running at full capacity and, backed by Lend-Lease deliveries, tank production had reached 29,000 units in 1944 with tank turrets becoming fully available for the armoured motor gunboats' construction programme. Large quantities of wrecked German tanks gave rise to ideas to redesign both gunboat projects and arm them instead with turrets taken from German tanks, although the idea never came to fruition.

During 1944–45, the total number of completed motor gunboats of both types reached 84; of these the *Project 1124* boats were in the minority as they were considered too large and unwieldy compared with their smaller counterpart. Most of the newly completed boats were delivered to the Dnieper and the Danube Flotillas, then making their way through Eastern Europe. The Danube Flotilla had been redeployed in April 1944 with a force of 50 motor gunboats taken from the disbanded Azov Flotilla. Under the command of Rear-Admiral Sergey Gorshkov (C.-in-C. of the Soviet Navy

Project 1125 boats of the Danube Flotilla during transportation by rail. Note that masts were lowered and MG turrets atop the CT were removed. (Marek Twardowski collection)

A *Project 1124* boat damaged during landings off Eltigen, November 1943. (Author's collection)

during 1956–85), the flotilla returned to the Danube where it supported the Red Army in taking Belgrade, Budapest, Bratislava and Vienna, amongst other European cities.

The Amur Flotilla, 1945

During the war in Europe, the prevailing number of Soviet armoured motor gunboats remained idle on the Amur. Despite the possibility of shipping them to Europe by rail, the rolling stock was instead occupied with transporting Lend-Lease supplies delivered to Vladivostok from US ports. As part of the preparation for war against Japan, 30 motor gunboats of the 1945 production were transferred to the Far East and commissioned with the Amur Flotilla, raising the total number to 73 by the end of the year. The motor gunboats were organized into nine squadrons distributed between four brigades and one detachment. They participated in the Soviet–Japanese War in 1945, which lasted for three-and-a-half weeks and resulted in the conquering of Manchukuo and the northern part of Korea by Soviet 1st and 2nd Far Eastern Fronts. The Amur Flotilla supported crossings on the Amur, the Ussuri and the Sungari (Songhua) rivers and provided transportation of troops and equipment.

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BRONEKATER No 31 ON 7 OCTOBER 1943 OFF ELTIGEN

The illustration shows a *Project 1124* boat laid down early in 1941 as Yard Number 314 at Works No 340 in Zelenodolsk, numbered *Bronekater No 11*, and completed in December 1941, albeit without the tank turrets. In June 1942 it was adapted to house the experimental M-13-M Katyusha 132mm rockets instead of the aft tank turret, and in addition had one 3in/30 Lender gun forward. Renumbered *No 41* on 12 June 1942, it was commissioned to the 1st Division of the 1st Brigade of the Volga Flotilla and successfully completed firing trials of Katyusha rockets by 17 July. It was deployed off Stalingrad, renumbered *No 51* on 18 August and for the first time fired its Katyushas in combat on 29 August, covering the retreat of Soviet troops to the northern industrial part of the town. Its number was then changed again, this time to *No 31* on 16 November. Following surrender of the German 6th Army at Stalingrad on 2 February 1943 and repulsion of the Germans from the eastern coast of the Azov Sea in March 1943, *Bronekater No 31* was loaded onto a rail cart at Sarepta (south of Stalingrad) on 30 September. It was delivered to Yeysk at the Azov Sea coast and, on 2 October, commissioned to the Azov Flotilla, then under the command of Rear-Admiral Sergey Gorshkov. Together with 18 motor gunboats of the flotilla and hundreds of smaller craft, it participated in assault operations on the Crimea which started on the night of 1 November and which were characterized by the mass use of improvised craft. After crossing the Kerch Strait during a gale, the Soviet formations lost organization but were able to establish a small bridgehead at Eltigen, south of Kerch. Two days later, the Soviets landed north of Kerch with significant force. With the major ships of the Black Sea Fleet being kept safely in Caucasian ports, the burden of fire support was taken by the armoured motor gunboats of the Azov Flotilla. During a night action off Eltigen on 7 October, *Bronekater No 31* received a hit which broke its rudder cords and was beached by a groundswell. The immobilized boat was destroyed by German artillery fire with three of its crew killed, thus joining almost 100 various Soviet craft lost during the operation. The illustration shows *Bronekater No 31* firing its rockets.

The road to Berlin: the Dnieper Flotilla, 1943–45

When, at the end of September 1943, armies of the Soviet Voronezh Front reached the Dnieper, the Dnieper Flotilla was re-established in force, with 18 motor gunboats and other boats transferred from the Volga Flotilla by rail to Chernigov (now Chernihiv) on the Desna River. The flotilla was directed to the operational area of the 1st Belorussian Front, where it could be effectively employed in operations against German *Heeresgruppe Mitte* thanks to the latitudinal direction of the principal rivers in Belorussia.

The armoured motor gunboats of the Danube Flotilla prepared for launching after being loaded off carts. Note that the *Project 1125* boat on the left is armed with a Katyusha rocket launcher. (Author's collection, courtesy of Vitalij Kostrichenko)

In April 1944 the flotilla was transferred from the Desna River to the Dnieper at Kiev, and then to the Pripyat and the Berezina rivers where it acted in support of the Red Army troops, hampering German crossings and landing small assault parties. Pushing the Germans westwards, the Red Army crossed the Polish–Soviet border and entered Polish territories, which had previously been seized by the Soviet Union in 1939. On 12–14 July, during an assault on the town of Pinsk on the Pripyat, the motor gunboats with accompanying boats landed over 1,000 troops and delivered fire support. During this action *BK-92* and *BK-2* were lost, damaged by German artillery fire.

Wreck of the *Project 1125* boat *BK-303* (Yard Number 154) destroyed on 12 July 1944 by German artillery at the Pina River (tributary of the Pripyat River). (Marek Twardowski collection)

The flotilla's further progress west was blocked by damage to the Dnieper–Bug channel, so the boats were transported by rail to Małkinia Górna and launched on the Bug River in October 1944. They then moved to the Narew River and provided fire support to the Red Army troops which started to move in the vicinity of Warsaw, following a period of rest ordered by Stalin. The aim of this period of rest was to allow the Germans time to suppress the Warsaw Uprising led by the underground Polish Home Army, which was hostile to Communists.

Mid-November 1944 saw the flotilla start wintering (with boats hauled out), which lasted until mid-March 1945. Then, following the track of Red Army frontlines, the boats of the 1st and 2nd Brigade were moved through the Vistula, then from Modlin to the Bydgoszcz Canal, after from the Noteć River to the Warta, and finally to the Oder at Küstrin which was reached in mid-April 1945 – on the eve of the Soviet offensive of Berlin.

During 14–16 April, motor gunboats were involved in the crossing of the Oder, and provided fire support and AA defence of Soviet troops in the area of Küstrin. Afterwards they entered the Alte Oder branch to carry out landings west of Oderberg. To provide fire support, the boats of the 1st Brigade entered the Hohenzollernkanal (now the Oder–Havel Canal) on 27 April. The next day they headed for Berlin, but the move was so slowed down by destroyed bridges, locks and lifts, that when less than 40km from entry to the Havel River (that flows through Berlin) on 1 May 1945, they were ordered back. After reaching the Oder they then headed for Stettin.

The *Project 1124* boat *BK-162* and others of the Danube Flotilla landing troops in 1945. The name *Ejskij patriot is* displayed at the side close to the bow. The name commemorates citizens from Yeysk who 'voluntarily' contributed with part of their salaries to finance the building of the boat. This was not unusual in the Soviet Union until the death of Stalin, and reportedly was reintroduced in modern Russia after the start of the war with Ukraine. (Marek Twardowski collection)

List of river flotillas of the Soviet Navy, 1939–45			
Flotilla	Formed	Disbanded	Main base
Amur Flotilla	May 1920	Extant	Khabarovsk
Azov Flotilla	July 1941	October 1942	Mariupol Primorsko-Akhtarsk (Oct 1941)
	February 1943	April 1944	Yeysk Primorsko-Akhtarsk (Sept 1943) Temryuk (April 1944)
Caspian Flotilla	July 1920	Extant	Baku
Danube Flotilla	June 1940	November 1941	Izmail Nikolaev (July 1941) Sevastopol (Sept 1941) Taman (Nov 1941)
	April 1944	September 1960	Odessa Izmail (Aug 1944)
Dnieper Flotilla	October 1925	June 1940	Kiev Pinsk (Oct 1939)
	September 1943	December 1945	Chernigov Kiev (Nov 1943) Pinsk (July 1944)
Ilmen Flotilla	July 1941	October 1941	Novgorod
Ilmen Squadron	April 1943	June 1944	Novgorod
Ladoga Flotilla	October 1939	November 1940	Shlisselburg Lakhdenpokhya
	June 1941	November 1944	Shlisselburg Novaya Ladoga (Sept 1941)
Onega Flotilla Onega Squadron Onega Flotilla	August 1941	November 1941	Petrozavodsk Voznesenне (Aug 1941) Vytegra (Oct 1941)
	April 1942	December 1942	Vytegra
	December 1942	July 1944	Vytegra
Pinsk Flotilla	June 1940	October 1941	Pinsk Kiev (July 1941)
Peipus Flotilla	July 1941	August 1941	Gdov
Peipus River Brigade	June 1944	November 1944	Gdov
Volga Flotilla	October 1941	June 1944	Ulyanovsk

The *Project 1124* boat *BK-163* (named *Stalinets*) in the foreground armed with a T-34 tank welded turret and a DShKM-2BU MG turret on top of the CT. In the background is a *Project S-40* boat with the DShK MG at the stern. It was part of the Danube Flotilla in 1945, apparently after VE day. (Author's collection, courtesy of Vitalij Kostrichenko)

Skerry monitors, 1943–45

In 1941 the Baltic Fleet, blocked by German–Finnish minefields, stayed idle in Kronstadt and Leningrad, while the naval warfare at the eastern part of the Gulf of Finland was reduced to numerous skirmishes between German armoured R-boats and the much weaker Soviet patrol boats and submarine chasers. In November 1942, the Soviet gunboat *Krasnoe Znamia*, which at that time was the biggest Soviet warship operating in the area, was sunk by Finnish MTBs, thus depriving the Soviet mosquito fleet of any support or cover.

A *Project 161* seagoing armoured motor gunboat photographed by the US naval attaché during a visit to Kronstadt at the end of 1944. Note the camouflage and variety of weaponry carried. Looking from the bow: single 45mm/68.6 21-KM AA gun, forward T-34 tank turret, two 0.5in DShK MGs behind the turret, one atop the CT, aft T-34 tank turret, single 45mm/68.6 21-KM AA gun, and single 37mm/67.5 61-K AA gun foremost aft (covered by canvas). (Naval History and Heritage Command NH 79320)

Therefore, the concept of a 3in-gunned seagoing armoured motor gunboat known as MBK (*Morskoj Bronekater* = Seagoing armoured motor gunboat) was revisited. The general design and concept was based on the abandoned *Project 138*, but was completely revised by the design bureau of Works No 194 (A. Marti Yard) to consider the production possibilities in besieged Leningrad. The design was supervised by D. Zagajkevich and was allocated the code *Project 161*. Compared to its predecessor, it was greatly simplified to reflect the wartime availability of components. The T-34 tank turrets and US-produced Packard engines were available, but to conserve power in the besieged Leningrad, the hull lines were designed to eliminate the necessity for bending plates in two planes which resulted in an awkward shape at the ends. This caused large pressure resistance, and during trials of the prototype *BK-501* at 10 knots, generated a large wave in front of the bow, while the designed speed of 15 knots was missed by 2.5 knots. At sea states 3–4, the boat became very wet forward which put the tank turret out of action. The Series I of ten boats was completed late in 1943. The Series II of a further ten boats was improved by streamlining the bow section and adding a forward bulwark with prominent sheer and significant flare. Although the Red Army offensive which started in January 1944 unblocked the Gulf of Finland within a few months, *Project 161* boats (nicknamed *Skerry monitors*) remained the only major Soviet surface warships operational in the Baltic by the end of the war.

***Project 161* armoured-motor-gunboat specification**	
Displacement	151.8 tons standard; 157.8 tons full load
Dimensions	Length: 32.6m; beam: 5.5m; draught: 1.28m
Complement	3 officers and 36 men
Armament	2 Model F-34 3in/41.5 guns in T-34-76 tank turrets
	2 Model 21-KM 45mm/68.6 guns
	1 Model 70-K 37mm/67.5 AA gun
	1 or 2 Model DShK 0.5in/79 machine guns
Armour	belt: citadel 50–52mm; ends 14–18mm
	deck: citadel 30–35mm; ends 14mm
	tank turret: face, sides, rear 45mm; roof 20mm
Machinery	2 Packard 4M-2500 W8 petrol engines driving two shafts
Speed	14.6 knots at 2,400hp
***Project 161* construction**	
Builder	Works No 194 (A. Marti), Leningrad; laid down 1943, completed 1943–45
Class	**Series I**: BK-501–BK-510 (Baltic); **Series II**: BK-511–BK-520 (Baltic)

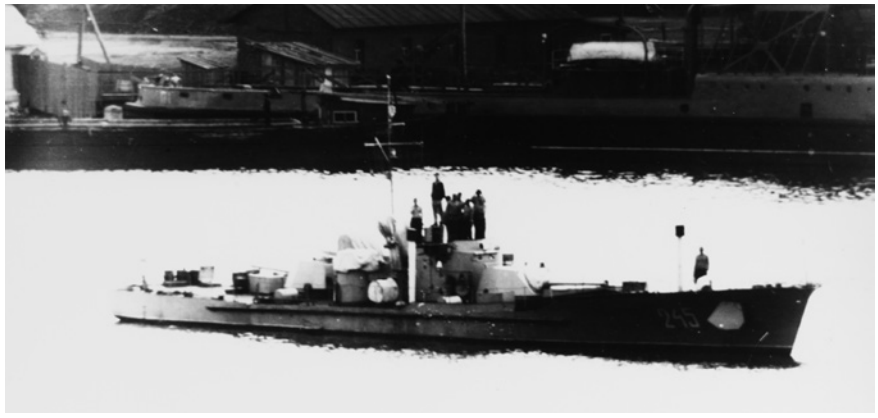
The improved design of *Project 161* was ordered parallel to design bureau No 35, known as *Project 186*, led by Iurij Benua, and design bureau No 194, known as *Project 161u*, led by Iurij Derevianko. (The

'u' added to the project number means *ulutshennyj* = improved.) The latest experience in design, construction and trials of the skerry monitors prevailed and finally *Project 161u* design was selected, with the project code *186* reallocated to the project of Derevianko. The length was increased by over 9m, hull lines were streamlined, diesel propulsion was installed with heavy armament of two 85mm guns in special naval MK-85 type turrets with 77-degree elevation – as fulfilment of the requirements issued in 1934. Owing to delays to the MK-85 turrets, the Series I of eight boats completed in 1945 was fitted temporarily with T-34-85 tank turrets, which were replaced by the designed model after 1946. In total 37 boats were built and completed during 1946–50.

A *Project 161* seagoing armoured motor gunboat on 2 January 1944 with its T-34 tank cast turret. The 0.5in DShK MG is seen behind the turret. (Getty Images 170985631)

***Project 186* armoured-motor-gunboat specification**	
Displacement	154.5 tons standard; 163.5 tons full load
Dimensions	Length: 35.8m; beam: 5.56m; draught: 1.6m
Complement	3 officers and 39 men
Armament	2 Model ZIS-S-5 85mm/54.6 guns in T-34-85 tank turrets (provisionally BK-521–BK-528)
	2 Model MK-85 85mm/52 guns in single MK-85 turrets (installed from 1946)
	1 Model 70-K 37mm/67.5 AA gun
	2 Model DShKM-2BU twin turrets with DShK 0.5in/79 machine guns
Armour	belt: citadel 20mm; ends 8mm
	deck: 20mm; ends 9mm
	conning tower: sides 30mm; roof 20mm
	T-34-85 tank turret: face, sides, rear 90mm; roof 60mm
	MK-85 turret: face, sides, rear 30mm; roof 20mm
Machinery	2 General Motors diesel engines driving two shafts
Speed	14 knots at 1,000hp; range 2,890nm at 5.3 knots; oil fuel 7.5 tons
***Project 186* construction**	
Builder	*Works No 194* (A. Marti), Leningrad; laid down 1944–45, completed 1945–47. *Class: BK-521–BK-555, MKL-69–MKL-71* (Baltic)
Class	*BK-521–BK-555, MKL-69–MKL-71* (Baltic)

A *Project 186* seagoing armoured motor gunboat in an official shipyard photograph. Note the provisional armament of 85mm/54.6 ZIS-S-53 guns in T-34/85 tank turrets and single 37mm/67.5 61-K AA gun abaft the CT. On both sides of the CT are DShKM-2BU turrets. (Author's collection)



A *Project 186* seagoing armoured motor gunboat photographed in 1956. Note that it carries its designed armament of 85mm/52 HA guns in the MK-85 type turrets. (Naval History and Heritage Command NH 92780)

AFTERMATH

RIVER GUNBOATS IN THE COLD WAR

Projects of the *190* series

In August 1943, staff requirements were issued (code *Project 190* and *Project 191* respectively) for replacement of *Projects 1124* and *1125*, and designs were allocated to the TsKB No 32, with Iurij Benua as the general designer. The specification emphasized changing the main armament from tank turrets to 85mm dual purpose mountings, increasing the AA armament and armour protection, introducing diesel propulsion and increasing speed. The ability to transport by rail remained an important feature. Of several innovative ideas (like aerial lubrication of the hull to reduce friction resistance, tested on the *Project 1124* boat *BK-437* in 1944), the one of a shielded armour system was accepted following 1943 trials of the *Project 1124* boat *Bronekater No 411* of the Azov Flotilla with a 7mm shield installed around belt armour plating which increased immunity against MG bullets from 0.3in to 0.5in calibre. On the new design, the shield was integrated with the boat's side while the internal armour belt was inclined by 9 degrees. The whole construction was sophisticated, and in the case of damage, the repairs often required parts not available in the field. The same was true of the naval MK-85 dual purpose turrets, specially designed in 1944 by the Metallicheskij Works. They could not be repaired with regular Army field workshops, or replaced by the army stock, so the new generation of the river tanks lost one key advantage – compatibility with Red Army logistics.

A *Project 191M* boat with its 85mm/52 HA gun in the MK-85 turret. (Author's collection, courtesy of Boris Lemachko)

Project 191 was approved in early 1945 and the prototype was laid down in April 1945 at Works No 344 at Molotov, to be completed in October 1946. During trials, the maximum speed of 15 knots was attained, but was far from the 21 knots designed, caused by low output from the V-2 diesel engines. After the M-50 diesels entered series production, the design was modified to change these engines to twice

the output. Following successful trials, the boat which got the *Project-191M* code was put into series production at the Izhora Works at Kolpino with 188 boats completed by 1952 and commissioned to the Dnieper and the Amur Flotillas.

As these rivers ceased to be the true borders and became internal to the 'socialist camp', so the need for armoured motor gunboats diminished. Most were mothballed; the remainder transferred to police duties with the Border Guard. The change to rocket and nuclear armed forces directed by Khrushchev put an end to any further development. Therefore, the follow-on *Project 192* was cancelled after building just two prototype boats. Because of the growth in size of the *Project 191* boats, which with 50-ton full-load displacement exceeded those of *Project 1124* – already considered too large – the far bigger *Project 190* for an 82-ton motor gunboat was cancelled in 1949.

The armoured motor gunboat firing 132mm Katyusha rockets from the M-13-M launcher during operations off Bratislava in 1945. (Marek Twardowski collection)

Project 1204

Just half a year after Khrushchev's fall, requirements were issued in March 1965 for a new armoured motor gunboat which had the designation *Project 1204* (code *Shmel*). The reason was the diminishing number and growing obsolescence of the previous generation of motor gunboats as well as deteriorating Sino–Soviet relations, which raised concerns for the Red Army about the defence of the Amur and their ability to land there. The preliminary design studies were ordered at the TsKB No 19 (to be renamed '*Almaz*' the following year) and entrusted to Iurij Benua, whose first approach was to refresh *Project 192* with new armament and equipment. This idea was rejected because poor living conditions on board were not an issue as naval missions only took place during daylight hours. Border Guard duties prevailed in this case, while patrol duties on rivers and lakes were the top priority on the list of future missions. The technical design was approved at the end of 1965, and after the death of Iurij Benua the following year, further project work was managed by Leonid Ozimov. The general layout, based on *Project 1125*, was a 70-ton hull of 2.8m depth with 8mm side armour, and two M-50 diesel engines capable of 26 knots, armed with a 90mm D-62 smoothbore gun in the PT-90 amphibious tank turret, two 14.5mm MG mountings, one 17-barrelled 170mm rocket launcher, one 120mm 2B11 mortar and two anti-tank missile launchers 9K11 Maliutka (NATO AT-3 Sagger). The final armament differed from the designed one, as the PT-90 tank did not enter production so was replaced by a 3in D-56TC gun in the turret of a PT-76 tank which was the standard amphibious type in use in the Red Army at that time. The anti-tank missile launchers were not fitted, as their manual guidance through an optical sight proved to be too tricky on a moving and rolling boat. Hull motions which caused ineffective mortar aiming was also a reason to omit the 120mm mortar from the list of weaponry.

G

1. *PROJECT 191M*

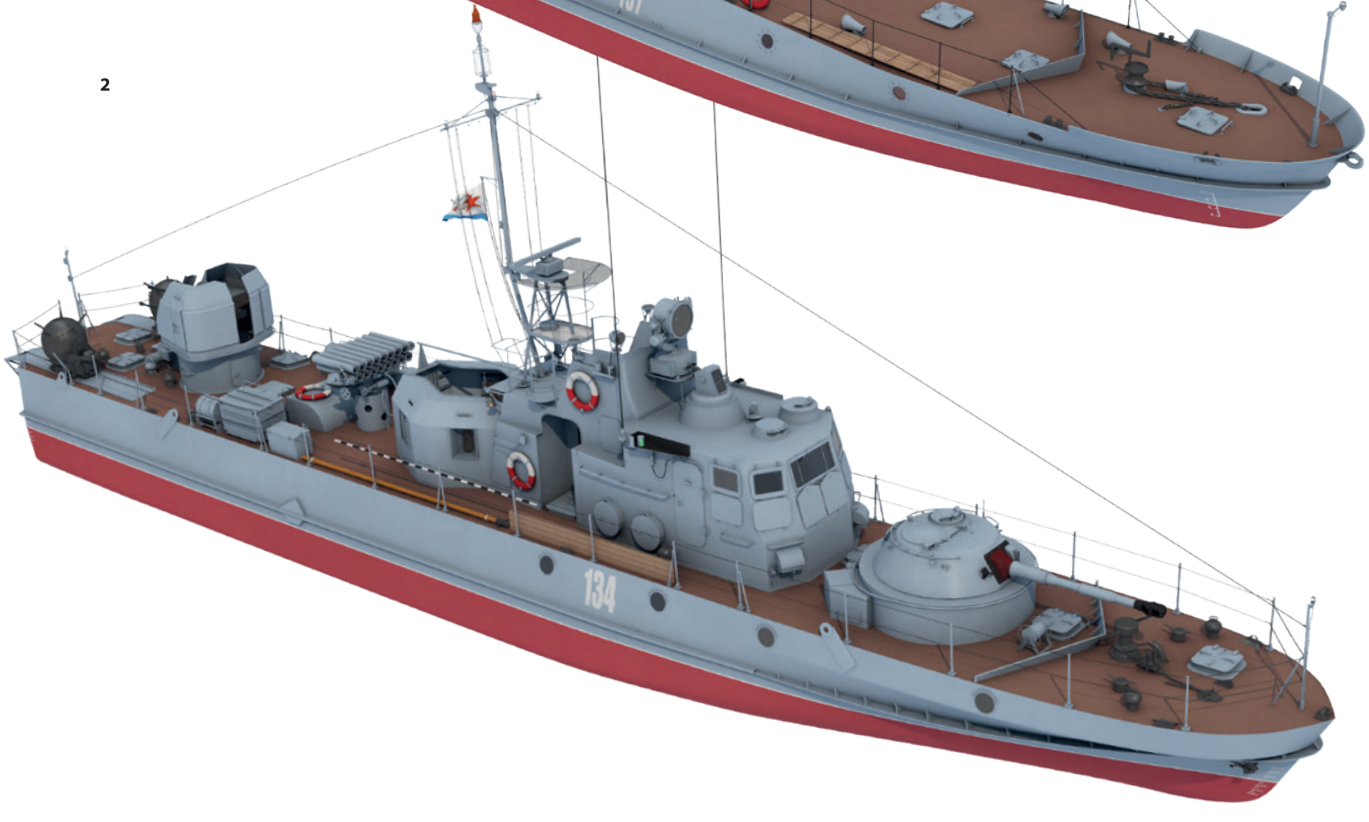
***Project 191/191M*-motor-gunboat specification**	
Displacement	48.9 tons standard; 49.6 tons normal; 50.3 tons full load
Dimensions	Length: 25.9m; beam: 4.4m; draught: 0.6m
Complement	1 officer and 13 men
Armament	1 Model MK-85 85mm/52 gun in MK-85 turret
	2 Model 2M-6 twin turrets with KPV 14.5mm machine guns
	6 Model R-1 mines
Armour	belt: citadel 14mm; ends 7mm
	deck: citadel 10mm
	conning tower: sides 14mm; roof 10mm
	MK-85 turret: face, sides, rear 30mm; roof 20mm
	2M-6 turret: face, sides, rear 7mm; roof 10mm
Machinery	2 M50 diesel engines driving two shafts
Speed	24 knots at 2,000hp; range 175nm at 15 knots
***Project 191* construction**	
Builder	Works No 344, Molotov; laid down 1945, completed 1946
Class	*BK-165* (Baltic)
***Project 191M* construction**	
Builder	Works No 194 (A. Marti), Leningrad; Works No 344, Molotov; laid down from 1945, completed 1947–52
Class	*BK-167–BK-174, BK-275–BK-300, BK-491–BK-499, BK-544–BK-549, BK-571–BK-580, BK-590–BK-598, BK-603–BK-615, BK-617–BK-628, BK-632–BK-634, BK-925–BK-960* (40 boats, Amur)

2. *PROJECT 1204*

***Project 1204*-gunboat specification**	
Displacement	66.95 tons standard; 70.68 tons full load
Dimensions	Length: 27.7m; beam: 4.3m; draught: 0.8m
Complement	1 officer and 13 men
Armament	1 Model D-56TS 3in/40 gun in PT-76 tank turret
	1 Model 2M-3M twin mounting with 25mm/79
	1 Model AGS-17M grenade launcher
	1 Model BM-14-17 launcher with 17 barrels for M-14-OF rockets
	1 Model Strela-2M AA missile launcher
	4 Model IGDM mines, 10 Model IaM mines
Armour	belt: citadel 8mm
	deck: citadel 5mm
	PT-76 turret: face, sides 15mm; rear 10mm; roof 6mm
	2M-6 turret: face, sides, rear 7mm; roof 10mm
Machinery	2 M-50F-5 diesel engines driving two shafts
Speed	26.2 knots at 2,400hp; range 348nm at 10.7 knots
***Project 1204* construction**	
Builder	Zaliv Ship Repair Yard (Kerch); 61-Kommunara Yard, Nikolaev; Almaz, Leningrad; prototype laid down 1966, last boat completed 1972
Class	*AK-197–AK-199, AK-201–AK-203, AK-205–AK-209, AK-211, AK-222–AK-225, AK-234, AK-241–AK-250, AK-255–AK-273, AK-314, AK-316, AK-354, AK-374, AK-384, AK-385, AK-387, AK-397–AK-399, AK-404–AK-409, AK-483–AK-485, AK-489, AK-500–AK-509, AK-527, AK-563, AK-564, AK-581–AK-585, AK-587–AK-589, AK-599–AK-602* (10 boats Baltic, 30 boats Amur, 16 boats Black Sea)
KGB Border Guard	*PSKR-336–PSKR-377*

1

2



A *Project 1204* boat presenting its twin 14.5mm 2M-3M AA MGs and behind, the 17-barrelled BM-14-17 launcher for 140mm rockets. (Marek Twardowski collection)

The prototype boat *AK-354* (AK stands for *Artillerijskij Kater* = Artillery Boat) was completed in September 1969 at the Zaliv Shipyard at Kerch, and by 1974, a series of 97 were built there, with a further 20 built by the 61 Kommunara Yard at Nikolaev. Of these, 56 were commissioned to the Black Sea and Pacific Fleets and the Caspian Flotilla, while 62 went to the Border Guard (the latter got the pennant PSKR which stands for *Pogranichnyj Storozhevoj Korabl'* = Border Guard Escort Ship). Later, almost all the naval boats were transferred to the Border Guard. Following completion, the MGs were replaced by 25mm/79 twin 2M-3M mountings with one AA missile launcher Strela-2M added later. In the mid-1970s, some boats were fitted with four AGS-17M 30mm grenade launchers.

Project 1204 boats were employed in the Soviet-Afghan War as part of the so-called Termezkaia Flotilla of the Border Guard on the Amu-Daria and the Panj rivers. By the end of Soviet involvement in Afghanistan, the number of boats in service there had reached eight. They performed tasks typical of their type, such as patrolling the border rivers, convoying transports, landing assault parties and providing fire support to troops. The latest operational involvement of *Project 1204* was protection of the Kerch Bridge, where two boats were transferred in 2018 from the Caspian to form a patrol line. However, this effort did not save the bridge from attack on 8 October 2022.

End of an era

Further development of the river-tank concept was fuelled by the Sino–Soviet conflict which lasted up to the mid-1980s. In 1967, staff requirements were

The *Project 1208* small gunship *Imeni 60-letiia pogranvojsk*. Note the 100mm/53 D-10T2S gun in the forward T-55 tank turret, AK-630 30mm Gatling gun above the wheelhouse with the fire control MR-123 (Vympiel) radar forward of the mast. The aft tank turret is barely visible behind the deckhouse. (Author's collection)

issued for a real river 'heavy tank' which had the code '*Slepen*' and design number *Project 1208*. The design was prepared by Almaz and was later taken over by the design bureau of Zelenodolsk Yard. The ship was rated as a 'small artillery ship' of 447-ton displacement, with 20mm side and 35mm deck armour, powerfully armed with two 100mm D-10T2S guns in T-55 tank turrets, two 30mm AK-613 Gatling guns, 140mm rocket launchers and grenade launchers. Ten of this class were laid down, albeit too late to participate in the Ussuri conflict in 1969. However, they were found to be useful so another improved design was laid down in 1982 before the attention of the Soviet regime turned towards the conflict in Afghanistan.

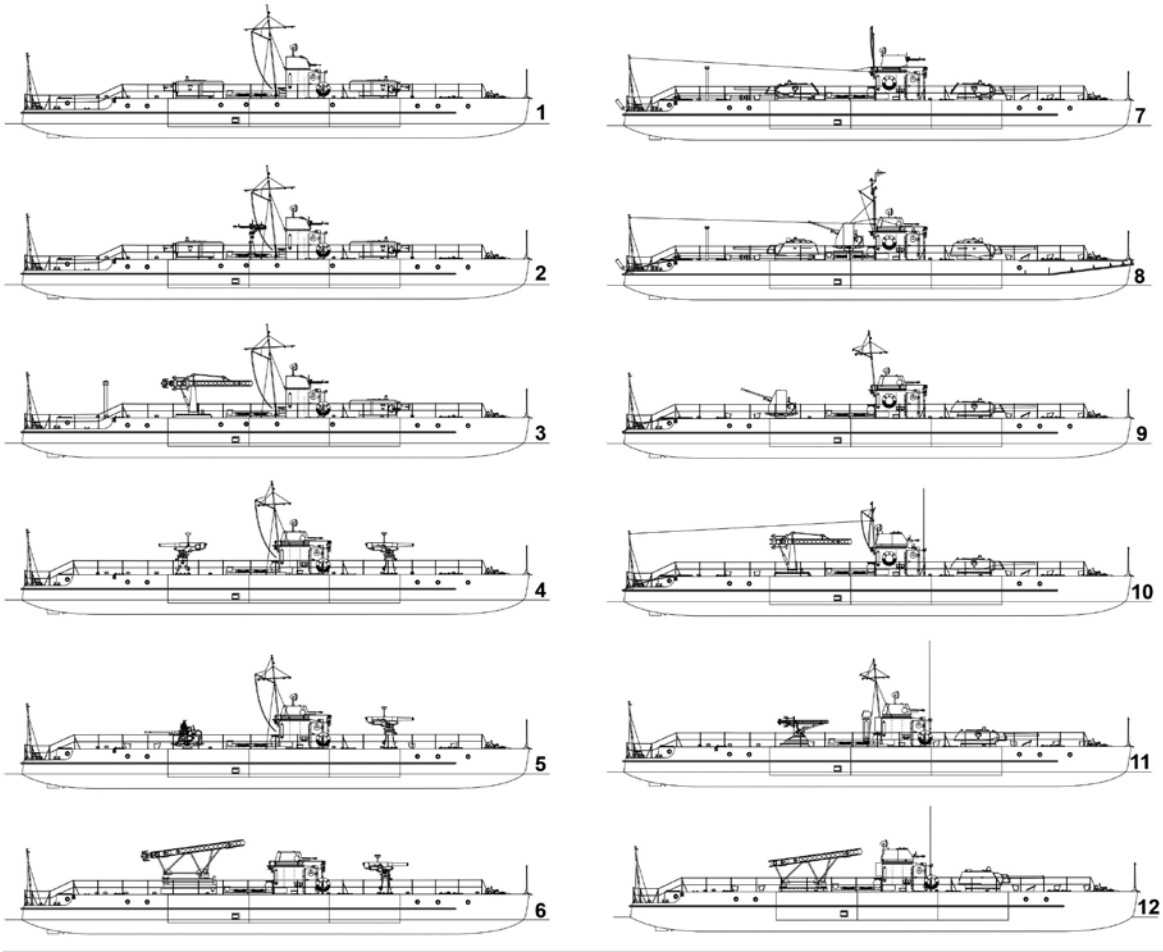
***Project 1208* small gun ship specification**	
Displacement	423 tons standard; 447 tons full load
Dimensions	Length: 55.10m; beam: 9.14m; draught: 1.44m
Complement	4 officers, 28 men
Armament	1 Model D-10T2S 100mm/53 gun in T-55 tank turret
	2 Model AK-630 single mountings of A-213 six-barrelled 30mm gatling guns
	2 Model BP-30 grenade launchers
	1 Model ZIF-121M launcher with 2 barrels for M-14-OF rockets
	1 Model Strela-2M AA missile launcher
	12 Model IGDM mines, 50 Model IaM mines
Armour	belt: citadel 20mm
	deck: citadel 35mm
	T-55 turret: face, rear 200mm; roof 15mm
	AK-630 turret: none
Machinery	3 M-504B diesel engines driving three shafts
Speed	26.8 knots at 7,600hp; range 626nm at 21.35 knots
Builder	Khabarovsk Shipbuilding Yard (Khabarovsk), prototype laid down 1975, last boat completed 1985
Class	*MAK-1–MAK-10* (Amur)

The prototype of the *Project 1248* border guard escort ship *PSKR-300*, showing its reduced armament as compared with the *Project 1208* boats. (Author's collection, courtesy of Boris Lemachko)

This class was followed by a more moderate design prepared in 1975 at Zelenodolsk, coded *Moskit* and numbered *Project 1248*. The ship, designated the 'Border Guard River Escort Ship' was half the size of the previous one and was fitted with one T-55 tank turret. Though neither were designated for army or naval service but for the Border Guard, they were considered the last of their type. Twenty-three were completed and commissioned to the Border Guard (a slightly modified series of six boats was temporarily in naval service) before the Soviet Union disintegrated on 26 December 1991.

CONCLUSION

River-armoured motor gunboats with tank turrets were a weapon unique to Russia. The armament of tank turrets solved several design, production and operational challenges: full protection of gun crews, compact and carefully designed mounting, large-scale production, compatibility with the Red Army in field ammunition supplies and use of field repair facilities. The result was a kind of 'river tank' – as the Russians nicknamed them – with fighting ability the enemy was never able to oppose with a vessel of similar qualities. The Soviet 'river tanks' were operated by the Navy but under operational command of the Army. Their operational area extended around almost half of the globe: from the Amur, through the Amu-Daria on the Afghan border, the Volga around Stalingrad, the Baltic, the Black Sea, the Caspian and the Azov seas, the Onega and the Ladoga lakes, the Danube up to Vienna, the Dnieper, the Pripyat, the Vistula, the Warta and the Oder rivers, and the Oder–Havel Canal in the vicinity of Berlin.



No	Main armament	Secondary armament	MGs
1	2 x T-28 tank turrets		1 x 0.3in DT in PB-5 turret
2	2 x T-28 tank turrets		2 x 0.5in DShK
3	1 x T-28 tank turret	16-M-13 rocket launcher	1 x 0.5in DShK
4	2 x 3in Lender guns		2 x 0.5in DShKM-2B turret
5	1 x 3in Lender gun	1 x 37mm AA gun	2 x 0.5in DShKM-2B turret
6	1 x 3in Lender gun	Army type M-24-M rocket launcher	2 x 0.5in DShKM-2B turret
7	2 x T-34 tank turrets		1 x 0.5in DShK in MTU-2 turret
8	2 x T-34 tank turrets	1 x 37mm AA gun	2 x 0.5in DShKM-2B turret
9	1 x T-34 tank turret	1 x 37mm AA gun	2 x 0.5in DShKM-2B turret
10	1 x T-34 tank turret	16-M-13 rocket launcher	2 x 0.5in DShKM-2BU turret
11	1 x T-34 tank turret	24-M-8 rocket launcher	2 x 0.5in DShKM-2B turret
12	1 x T-34 tank turret	M-13-M rocket launcher	2 x 0.5in DShKM-2BU turret

The *Project 1124* wartime armament variants. (Drawing by Jerzy Lewandowski)

In total 644 boats of this type were built in the Soviet Union during 1936–91, of these 161 were lost during World War II, and reportedly four remained in Russian service in 2022, two on the Caspian and two on the Azov Sea. Of eight boats transferred to Ukraine in 1995, two were active on the Danube in 2022.

The *Project 1125* boat *BK-302* of the Dnieper Flotilla preserved from 1975 at Khabarovsk. In May 1945 it operated at the Oder River and reached Stettiner Haff. (Author's collection)

Table: Number of armoured motor gunboats completed in the Soviet Union

Year	Project											Total
	1124	1125	S-40	191	191M	192	161	186	1204	1208	1248	
1936	19											19
1937	4											4
1938	9	8										17
1939		16										16
1940		18										18
1941	14	8	1									23
1942	6	17	7									30
1943	22	27					20					69
1944	24	27										51
1945	3	30						8				41
1946	2	30		1				29				62
1947		22			8							30
1948–52					110	2						112
1967–72									118			118
1979–91										11	23	34
Total	**103**	**203**	**8**	**1**	**118**	**2**	**20**	**37**	**118**	**11**	**23**	**644**

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Dedication

To my mother